Kelvinator Executives Conduct Series Of Field Conventions

(*Concluded from Page 1, Column 1*)

campaign will be presented at these meetings.

The Kelvinator factory will be literally brought to these conventions through the showing of a sound motion picture of the various departments of the Detroit and Grand Rapids factories. Important factory operations will be vividly portrayed, and there will be "talking" explanations by a factory expert.

Dates for the various conventions, distributorships at which they will be held, and factory representatives who will attend are as follows:

Jan. 18, Philip Werlein, Inc., New Orleans, La.: General Sales Manager J. S. Sayre, Regional Manager S. A. Camper, District Manager G. E. Wagoner. D. T. Lansing Co., Scranton, Pa.: Vice President H. S. Burritt, Regional Manager J. C. Burton, District Manager S. A. Kelsey, Advertising Counsel, E. L. Triffit, Brooke, Smith & French agency.

Jan. 19, "555", Inc., Little Rock Ark.: Advertising Director A. M. Taylor, Sales Promotion Manager Vance C. Woodcox, District Manager J. B. Taylor. Mathews Refrigerator Co., Montgomery, Ala.: Sayre, Camper and Wagoner. Allentown and Hazeltown dealers at Allen town, Pa.: Burritt, Burton, Kelsey and Triffit.

Jan. 20, Tom Cooper Automobile Co., Oklahoma City, Okla.: A. M. Taylor, Woodcox, J. B. Taylor. Kelvinator-Kelly Co., Harrisburg, Pa.: Burritt, Burton, Kelsey, Triffit.

Jan. 21, Kelvinator-Wichita Co.: A. M. Taylor, Woodcox, J. B. Taylor. McGinnis Co., Jacksonville, Fla.: Sayre, Camper, District Manager Charles Meredith. Kelvinator-Bohman, Hagerstown, Md.: Burritt, Burton, Triffit, District Manager C. R. Brogan.

Jan. 22, Kelvinator Sales Corp., St. Louis, Mo.: A. M. Taylor, Woodcox, General Branch Manager G. F. Strelinger. Kelvinator-Kimmell, Palm Beach, Fla.: Sayre, Camper, Meredith. Barber & Ross, Washington, D. C.: Burritt, Burton, Triffit, District Manager A. L. McMillan.

Jan. 25, Wiswell Radio Co., Chicago, Ill.: Burritt, A. M. Taylor, Regional Manager H. A. Dahl, District Manager T. H. Maginniss. Graybar Co., Knoxville, Tenn.: Woodcox, Camper, Advertising Counsellor F. V. Andrews, Brooke, Smith & French, District Manager W. M. DeWitt.

Jan. 26, Milwaukee Electric Railway & Light Co., Milwaukee, Wis.: Burritt, A. M. Taylor, Dahl, District Manager J. B. Loomis. Street Co., Nashville, Tenn.: Woodcox, Camper, Andrews, District Manager W. E. Harveycutter.

Jan. 27, H. E. Sorenson & Co., Des Moines, Iowa: Burritt, A. M. Taylor, Dahl, District Manager James Glaser. Baltimore Gas Co., Baltimore, Md.: Sayre, Burton, Triffit, McMillan. Delworth Co., Memphis, Tenn.: Woodcox, Camper, Andrews, Harveycutter.

Jan. 28, Northern States Power Co., Minneapolis, Minn.: Burritt, Taylor, Dahl, District Manager W. C. Stephenson. Kelvinator Sales Corp., Philadelphia, Pa.: Sayre, Burton, Triffit, District Manager S. A. Kelsey. Stratton & Sterstegge, Louisville, Ky.: Woodcox, Camper, Andrews, DeWitt.

Jan. 29, Kelvinator Sales Corp., Boston, Mass.: Sayre, Burton, Triffit, District manager L. L. Langley. Graybar Co., Cincinnati, Ohio: Woodcox, Andrews, Camper, DeWitt.

Jan. 30, Graybar Co., Omaha, Nebr.: Burritt, A. M. Taylor, Dahl, Glaser. Cumberland Power & Light Co., Portland, Me.: Sayre, Burton, Triffit, Langley.

Feb. 1, Standard Talking Machine Co., Pittsburgh, Pa.: Burritt, A. M. Taylor, Regional Manager J. S. Crossin, District Manager G. B. Ewald. Hartford Piano Co., Hartford, Conn.: Sayre, Burton, Triffit, District Manager Gordon Malone.

Feb. 2, Kelvinator-Buffalo, Buffalo, N. Y.: Burritt, A. M. Taylor, Crossin, District Manager A. Hotton.

Feb. 3, Meachem-Fenn, Inc., Syracuse, N. Y.: Burritt, Taylor, Crossin, Hotton.

Feb. 4, Albany Garage, Albany, N. Y.: Burritt, A. M. Taylor, Crossin, Hotton.

Feb. 5, John Van Benschoten, Poughkeepsie, N. Y.: Burritt, Taylor, Crossin, Hotton.

Feb. 6, Kelvinator Sales Corp., New York City: Burritt, A. M. Taylor, Strelinger.

Feb. 8, Star Electrical Co., Erie, Pa.: Crossin, Triffit, Ewald.

Feb. 9, Earl Rogers, Inc., Wheeling, W. Va.: Crossin, Triffit, Ewald.

Feb. 10, Williams Hardware Co., Clarksburg, W. Va.: Crossin, Triffit, Ewald.

Feb. 11, Emmons-Hawkins Hardware Co., Huntington, W. Va.: Crossin, Triffit, Ewald. Zion Cooperative Co., Salt Lake City, Utah.: Sayre, Woodcox, Regional Manager J. S. Cortines, District Manager W. B. Milliken.

Feb. 12, Walker Electric Co., Boise, Idaho: Sayre, Woodcox, Cortines, District Manager L. A. Klein.

Feb. 15, Kelvinator-Flint, Flint, Mich.: A. M. Taylor, Crossin, District Manager C. V. Calkins. Tull & Gibbs, Spokane, Wash.: Sayre, Woodcox, Cortines, Klein.

Feb. 16, Garlock Sales Co., Lansing, Mich.: A. M. Taylor, Crossin, Calkins. Standard Furniture Co., Seattle, Wash.: Sayre, Woodcox, Cortines, Klein.

Feb. 17, Consumers Power Co., Grand Rapids, Mich.: Taylor, Crossin, Calkins. Powers Furniture Co., Portland, Ore.: Sayre, Woodcox, Cortines, Klein.

Feb. 19, Sherman Clay Co., San Francisco, Calif.: Sayre, Woodcox, Cortines, District Manager W. T. Race.

Feb. 20, Kelvinator Sales Corp., Sacramento, Calif.: Sayre, Woodcox, Cortines, Race.

Feb. 22, Kelvinator Sales Corp., Stockton, Calif.: Sayre, Woodcox, Cortines, Race.

Feb. 23, Kelvinator Sales Corp., Fresno, Calif.: Sayre, Woodcox, Cortines, Race.

Feb. 24, Kelvinator Sales Corp., San Jose, Calif.: Sayre, Woodcox, Cortines, Race.

Feb. 25, Kelvinator Sales Corp., Los Angeles, Calif.: Sayre, Woodcox, Cortines, District Manager V. B. Martin.

Feb. 26, Kelvinator Sales Corp., San Diego, Calif.: Sayre, Woodcox, Cortines, Martin.

Feb. 29, Electrical Equipment Co., Phoenix, Ariz.: Sayre, Woodcox, Cortines, District Manager H. L. Percy.

Editor on Wheels

(*Concluded from Page 8, Column 4*)

Cincinnati has the courage and independence of the Roman dictator, Cincinnatus, from whom the city took its name.

Cincinnatus was a farmer who went to the big city when it needed a strong man, ran the country according to his own ideas and without listening to others, and then quietly returned to his farm when the job was finished.

One has the feeling that Cincinnati is being run by strong men who came from the soil, who know what they want to do and are doing it, and who don't care a rap what the rest of the world thinks about it.

"Independent" is the Open Sesame to Cincinnati. It defies classification. It refuses to become a type, to run true to a pattern. It is open, frank, honest, yet mysterious and unfathomable. And that, you must agree, is a fetching combination.

Faraday Official

H. H. WAMPLER

Assistant sales manager of Faraday, new gas refrigerator, which will be marketed only by gas utilities.

CROSLEY INTRODUCES LOW-PRICED MODELS

(*Concluded from Page 1, Column 2*)

Crosley line when it was ready for the market.

Some few Crosley radio distributors who are now distributors for other electric refrigerators will not be asked, however, to switch to Crosley refrigerators. These particular distributors have made so much money with their present lines of refrigerators that they will not be requested to change, according to Mr. Bauer.

Refrigerating machines for the new line will be made in the Crosley factory at Cincinnati, where assembling will also be done. Cabinets will be purchased from reputable cabinet manufacturers. E. Austin is the production manager.

Development of the unit has largely been in the hands of R. H. Money and C. Pitsenbarger, refrigeration engineers attached to the Crosley staff. For the past few months, however, D. P. Heath, consulting engineer from Detroit, has been actively engaged in whipping the unit into shape for production.

Complete details of the new Crosley refrigerator will be published in the *Engineering Section* of the next issue of ELECTRIC REFRIGERATION NEWS.

For some years Crosley has been marketing an absorption refrigerator, the Crosley "Icy-Ball," for use in farm homes, where electricity and gas were not available, and for the export trade.

'Pepper' Hits His Mark

John Leonard "Pepper" Martin, Cardinal hero of the recent World's Series, recently purchased a General Electric refrigerator in which he will store the game he shoots in Oklahoma.

Faraday Announces Gas Refrigerator

(*Concluded from Page 1, Column 1*)

mit remote installation, and allow automatic defrosting.

Three household models, the F-41, F-52 and F-68, with cubic content of food compartments corresponding to the model numbers, will comprise the introductory line. Tooling is nearing completion and production will begin in February. Quantity shipments will probably be made in March.

Models will be furnished with food compartments which have acid-resisting porcelain bottoms. All models, including the smallest size, have three trays for ice and dessert freezing, providing 63 ice cubes, or nine pounds of ice at one freezing. The same refrigerating unit will be used in all three models.

Feature of the new Faraday is its self-defrosting under ordinary operating conditions. The coil is porcelain-on-steel, with the freezing chamber enclosed.

Temperature regulator is standard equipment, and it is so designed that whether the installation is unit or remote, the temperature regulator remains on the cabinet.

With the temperature regulator at normal operating position, the coil is self-defrosting, and never needs attention from the user. A defrosting position is provided for use when the refrigerator has been operated at the lower temperatures made possible by the temperature regulator.

The entire unit, save the water valve and gas burner, is sealed; and can be removed from the front without moving the cabinet.

Other features are a metallic insulation, providing enlarged storage space with more compact exterior design, and soundlessness. Cabinets are finished with five coats of Duco. Hardware is heavy brass, chrome-plated. On one side of the chilling unit is a tall bottle compartment, on the other is a tip-up shelf.

"Rapid development of the automatic refrigeration market has convinced us that there is a definite place in the industry for the gas-operated type of refrigerator," Mr. Callaway said. "The Faraday unit has been in the process of development in General Motors laboratories for many years. We feel that there is a large market for this type of automatic household refrigerator."

Faraday refrigeration is produced by the evaporation of liquid ammonia. A container, known as the absorber, is filled with a chemical compound, strontium chloride, which is a white powder. The powder is saturated with ammonia vapor, and the absorber is connected by a single tube to a chilling unit in the food compartment.

When refrigeration is needed, ammonia vapor is evaporated from the powder by gently heating the absorber, causing the ammonia vapor to flow through a water-cooled chamber or condenser, where it is changed to a liquid and in this form continues to the chilling unit.

When all the ammonia vapor is separated from the powder and thus transferred to the chilling unit, the heat is discontinued.

The liquid ammonia in the chilling unit then evaporates, extracting heat from the food compartment and carrying this heat back to the absorber unit. This cycle is repeated as required to maintain a proper temperature.

'PEPPER' MARTIN BUYS GENERAL ELECTRIC UNIT

OKLAHOMA CITY, Okla. — John Leonard Martin, better know as "Pepper" Martin, St. Louis Cardinal center fielder, bought the first General Electric refrigerator sold in this city in 1932.

"Pepper" Martin's playing was a big factor in the Cardinal's winning of the 1931 World's Series Championship from the Philadelphia Athletics, and sports writers recently voted him first position in a list of most popular sports figures of the year."

"Pepper," Mrs. Martin, and their two-year-old daughter, Mary Alyne, live at 2644 West 112th St.

KELVINATOR REPORTS NET PROFIT OF $1,671,709

(*Concluded from Page 1, Column 3*)

$20,011,399.10, as compared with $21,450,-896.46 for the previous fiscal year. According to the report, apartment house installations and Leonard ice boxes showed decreases in sales. However, unit sales of Kelvinator domestic refrigeration increased 10 per cent, and ice cream cabinets 13 per cent. The Leonard electric refrigerator also made an increase in sales.

The report includes the statement of Ernst & Ernst, accountants, a consolidated balance sheet of the Kelvinator Corp. and its subsidiaries, and individual balance sheets for each of the subsidiaries.

200 B.T.U. MEMBERS TO ATTEND CONGRESS

(*Concluded from Page 1, Column 5*)

go to Claude H. Wolf, salesman of Byars-Forgy Co., Tampa, Fla. The second highest honor, that of vice presidency, will be conferred upon another salesman, Cecil E. Kirby, Domestic Refrigeration Co., Miami, Fla. Eight cabinet members will be chosen from among those whose organizations made the next best records during 1931 and the remainder of the star selling men will be elected as representatives and senators of the honor organization.

A banquet, luncheons, factory tours, entertainment and business sessions will occupy the leading salesmen's time during the two days. Headquarters will be maintained in two of the city's largest hotels.

Jamerson Will Preside

Official reception committees will meet the visitors at the railroad station and escort them to headquarters, where they will be registered and provided with badges.

The first business session will be called to order by H. C. Jamerson, sales manager of the household division and chairman of the committee in charge of the program, at 10:30 a. m. of the first day.

E. G. Biechler, president and general manager, will welcome the stars in his keynote address and then the officers of the congress will be installed.

Cabinet construction methods will be studied during the afternoon when factory guides will escort the 200 leaders through the huge Moraine Frigidaire plant. They will be guests of the Frigidaire Employes Association at luncheon in the plant cafeteria and the annual group photograph will be made in front of the factory.

Biechler Banquet Toastmaster

Mr. Biechler will be toastmaster at the annual banquet, which is scheduled for the night of the first day. A metropolitan musical review will be brought to Dayton as a feature of the banquet.

Banquet addresses will be made by Mr. Biechler and C. A. Copp, assistant general sales manager.

An "early bird" breakfast will be used to launch the second day program. An early trip will be made to the Taylor St. factory where compressor and coil production will be observed. Later in the morning, the star salesmen will be given a glimpse into the future of their business when they attend an engineering demonstration at the Taylor St. plant.

Advertising and sales plans for 1932 will be explained and discussed at an afternoon session by E. D. Doty, advertising manager, and J. J. Nance, manager of the sales planning department. A commercial skit will be staged under direction of B. J. Vandoren, commercial sales manager.

The corporation will express its appreciation just before the congress is adjourned when Mr. Biechler will award each man with a gold watch.

Special cars, and in one instance a special train, will be used to bring the 200 honor men to Dayton. The eastern delegation has chartered three Pullman cars which will travel as a special train for a good part of the journey. The train will be parked in Dayton to await their return. Boston will engage special sleepers for their delegation and the selling men from the Atlanta region will arrive in a car which will be provided for their private occupancy.

LINE OF REFRIGERATORS BROUGHT OUT BY FADA

(*Concluded from Page 1, Column 5*)

gauge steel. The cooling unit is porcelain-shielded, with copper tube coils.

Solid brass hardware, chromium-plated, is of simple design. A concealed type hinge on the door eliminates warping and danger of finger-pinching; the door has air-cushion rubber gaskets.

The automatic temperature regulator has 10 points of variability in the switch adjustment. The two upper shelves fold against the side to permit extra bottle space; automatic light is included.

A single cylinder reciprocating type compressor is used with methyl chloride as the refrigerant, the entire unit being shock-mounted on springs.

On the compressor is a noiseless flexible coupling without belt drive. The fan is mounted direct to the motor shaft without other gears or pulleys The unit is powered by a 1/6-hp. capacitor type motor, operating on 110-volt, 60-cycle a. c., 110-volt, 25-cycle a. c., and 110-volt d. c.

Model No. 761 is all-porcelain finish with 7-cu. ft. capacity including the cooling unit and ice trays. The shelf area is 12.11 sq. ft. Three aluminum ice trays freeze 84 cubes. Model No. 760 is similar, except for lacquer exterior.

Model No. 651 is all-porcelain, with a 6-cu. ft. capacity; 84 ice cubes are frozen in three trays. Model No. 650 varies only by its lacquer exterior. The apartment size, No. 541, has 5-cu. ft. content, freezing 56 ice cubes in two trays. No. 540 is the duplicate in lacquer finish. Prices have not yet been announced.

WRITTEN TO BE READ ON ARRIVAL

Merchandising Section

IN TWO PARTS PART ONE

ELECTRIC REFRIGERATION NEWS

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'BIG 10' SALES IN 1931 SHOW 13.3% GAIN

NEWELL NAMED FRIGIDAIRE CORP. SALES DIRECTOR

Harlan Is Succeeded by Eastern Division Head

DAYTON, Jan. 25.—Appointment of H. W. Newell, manager of Frigidaire Sales Corp. of New England, as vice president of Frigidaire Corp. in charge of sales has been announced by E. G. Biechler, president. Mr. Newell, who succeeds J. A. Harlan, resigned, assumed his duties here today.

Mr. Newell is a native of Bellefontaine, Ohio, and a graduate of Dartmouth College. His first business experience was gained as a Delco-Light dealer in Bellefontaine.

Since 1930 he has been manager of the Frigidaire sales organization in New England, his territory including Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and most of Connecticut. Four years previous to 1930, he was general manager of the Boston distributorship.

Congress Convenes

DAYTON, Jan. 26.—The stage was set here today for the opening Thursday of the annual B.t.u. Quota Club Congress of Frigidaire Corp. when the 200 leaders of Frigidaire's 15,000 selling men in the United States gather as guests of the corporation.

Business and residential headquarters have been established in two of the

(Concluded on Page 2, Column 1)

MAJESTIC WILL HOLD DISTRIBUTOR MEETING

CHICAGO, Jan. 27.—Majestic distributors from all states east of the Rockies will assemble at the Grigsby-Grunow Co. plant here tomorrow for a two-day refrigeration convention at which the 1932 Majestic line will be introduced and sales plans for the spring campaign will be laid.

John Ditzell, sales manager of the newly organized refrigeration department, will be in charge of the proceedings. Some of the sessions are to be held at the Edgewater Beach hotel.

Alter Concentrates

CHICAGO—Harry Alter, who has long been distributor for Majestic radios and refrigerators in the Chicago territory, has announced that henceforth he will distribute Majestic refrigerators only.

Distribution of Majestic radios will be taken over by Wakem & Whipple, with offices at 225 E. Illinois St.

"We feel that the only way to do justice to the magnificent market here for electric refrigerators is to concentrate on the sale of that product alone," declares Mr. Alter.

A. H. Kessler has been appointed sales manager of the contract division of the Alter organization. Under his direction

(Concluded on Page 2, Column 5)

'SUBPOENAS' FOR G. E. WINTER CONVENTION ISSUED

CLEVELAND—"Subpoenas" from the "Supreme Court of the Land of Refrigerania" have been mailed out summoning everyone concerned with the sale of General Electric refrigeration to the "trial of the century" at the annual General Electric refrigeration convention to be held in Coral Gables, Feb. 1, 2, and 3.

Sales Chief

H. W. NEWELL

New vice president in charge of sales of Frigidaire Corp.

REFRIGERATION LINES SHOWN TO RADIO MEN

By George F. Taubeneck

CHICAGO—Seven makes of electric refrigerators were exhibited at the Chicago Radio and Electrical Show, held at the Coliseum here, Jan. 18 to 25, in conjunction with National Radio Week, the sixth annual convention of the National Federation of Radio Associations, and meetings of the Radio Wholesalers Association, the Institute of Radio Service Men, the National Broadcasting Co., and the Columbia Broadcasting System.

Copeland, Norge, Majestic, Gibson, Leonard, Williams Ice-O-Matic, and Crosley refrigerators were on display. The new Fada line was shown in the F. A. D. Andrea, Inc., suite in the Stevens hotel.

Louis Ruthenburg, president of Copeland Products, Inc., and chairman of the refrigeration division of the N. E. M. A., spoke at the national radio rally and mass meeting held in the Congress hotel Tuesday, Jan. 19. His speech is reported in full on pages 16 and 17 of

(Concluded on Page 19, Column 4)

CROSLEY SHOWS LOW-PRICED LINE AT RADIO EXHIBIT

100 Radio Distributors Endorse $99.50 Unit

By George F. Taubeneck

CHICAGO—The decision made by Crosley Radio Corp. officials to market a 4½-cu. ft. electric refrigerator for $99.50 f.o.b. Cincinnati was ratified by 100 representatives from 75 Crosley distributorships at a gathering of these distributors in the Congress hotel, Jan. 19 and 20.

Practically all of the Crosley radio distributors have agreed to take on the line of Crosley refrigerators, according to Neil Bauer, sales manager.

Powel Crosley, Jr., president, conducted the meeting of the distributors. Speakers included Neil Bauer, G. H. Corbett, advertising manager, F. E. Johnson, chief engineer, and F. G. Macomber, who is in charge of Crosley distributing operations.

Discounts and merchandising policies were thrashed out in round-table discussions.

Advertising plans are still in a state of flux, according to Mr. Corbett, but probably will include some national

(Concluded on Page 2, Column 5)

Macy's Product

NEW YORK CITY—Ivory, green, and white lacquered electric refrigerators are now being sold by R. H. Macy & Co., large department store here.

Three models are included in the Macy line, a 4½-cu. ft. refrigerator selling for $159, a 5.75-cu. ft. box selling at $189, and a 7-cu. ft. unit retailing at $219. Service is handled by Macy's own service organization.

Details regarding the construction of the refrigerator are published on page 8 of this week's *Engineering Section* of the NEWS.

Sell 800,813 Home Units; All Makes About 925,000

Retail Value of Household and Commercial Equipment Sold by NEMA Group Totals 250 Million Dollars

By STANLEY A. DENNIS
Statistical Editor
1932 Refrigeration Directory

DETROIT—More than 800,000 household electric refrigerators were sold during 1931 by the 10 manufacturing companies that are members of the Refrigeration Division of the National Electrical Manufacturers Association. Statistics released to ELECTRIC REFRIGERATION NEWS by the association during the past week place the total number of household refrigerators sold by the "big ten" group at 800,813. This is a larger number than was sold by the entire industry during 1930. At factory prices, this figure represents sales to the amount of $102,887,771. Both figures are new high marks for the 10 companies and enable the industry as a whole to establish new sales records for the year. The 1931 gain in quantity is 13.3 per cent. The gain in valuation is 10.9 per cent.

Commercial refrigerators to the number of 168,736 were sold during the year by the same companies, representing at factory prices a value of $24,671,716. Neither of these figures sets a new sales record for the 10 companies.

Combined sales for the group for 1931 amount, therefore, to 969,549 refrigerators valued at $127,559,487, at factory prices.

No estimate of the retail value of this volume of business has been released by the association, but refrigeration executives during the week have stated that the retail value would be about double the factory value, the resulting figure including distributor and dealer margins, transportation, and installation charges.

If this is so, and it seems reasonable, then the total business done by the "big ten" during 1931 would amount at retail to $255,118,974.

The 10 companies making up the Refrigeration Division are as follows: Copeland Products, Inc., Frigidaire Corp., General Electric Co., Kelvinator Corp.,

(Concluded on Page 14, Column 1)

BY F. M. COCKRELL
Publisher
Electric Refrigeration News

DETROIT—Judging from incomplete returns of confidential figures being furnished by manufacturers of refrigeration equipment, the industry fell short of its goal of one million household electric refrigerator sales in 1931. Information already received makes the total over 900,000. A few important companies yet to be heard from and allowance for the activities of local assemblers will bring the total household installations up in the neighborhood of 925,000.

While it appears that the industry will be short of its quota about 75,000 units, there is ample satisfaction for all in the actual gain in the 1931 sales, compared with the previous year, and the fact that a new high record was achieved during a year when practically all other lines of business suffered heavy losses.

Accurate and detailed figures compiled by the Refrigeration Division of National Electrical Manufacturers' Association, representing 10 of the leading companies, have just been released for publication in ELECTRIC REFRIGERATION NEWS. In addition to the number of household and commercial units and the

Complete industry statistics showing sales of all classes of refrigeration equipment, analysis of distribution methods, potential market in every town of 2,500 population or more and comparative figures for other appliances will be published in the 1932 Refrigeration Directory and Market Data Book to be issued in February.

dollar value at factory prices, the totals are broken down to show quantities for various types and sizes of equipment sold during the past four years (1928, 1929, 1930, and 1931). For 1930 and 1931 the figures are given by months. For the last three months of 1931 manufacturers' stocks and stocks in the hands of distributors and dealers are shown. The statistical information furnished by the association reveals facts and figures which have been, heretofore, jealously guarded secrets.

Incidentally, the re-check of the figures for 1928, 1929, and 1930 serves to confirm the estimates made by ELECTRIC REFRIGERATION NEWS one year ago. In the January 14, 1931, issue estimates of

(Concluded on Page 14, Column 4)

They're in the Movies Now

George Mason and cohorts act in talkie which will be seen by entire Kelvinator field organization.

NORGE STARTS SERIES OF CONVENTIONS IN FIELD

DETROIT—Fifteen officials from Norge Corp. headquarters started this week on a series of distributor-dealer meetings to be held in key cities throughout the United States, to acquaint the Norge selling organization with the details of the 1932 line.

John H. Knapp, vice president and director of sales, is directing these meetings, and is being assisted by R. E. Densmore, western sales manager; M. G. O'Harra, eastern sales manager; J. J. Davin, J. R. Blocher, and T. P. Hallock, eastern divisional managers.

J. E. Oliphant, George Pizarro, A. N. Delzeith, E. R. Ridway, W. C. Rowles and F. O. Fleischer, western divisional managers; J. A. Sterling of the Norge sales promotion department, and R. E. Caldwell and H. W. Terry of the Cramer-Krasselt Co., advertising agency, Milwaukee.

FRIGIDAIRE SALESMEN ARRIVE AT CONGRESS

(Concluded from Page 1, Column 1)

city's leading hotels, reception committees have been appointed, factory guides have been schooled and the program for the two-day event is complete in every detail.

Membership in congress is the highest sales honor accorded by this company and is gained by outstanding selling records during the year. Leading members of the congress will be the president, vice president and eight cabinet members.

Claude H. Wolfe, Tampa, Fla., salesman, was chosen president of the congress last week and Cecil E. Kirby, Miami, Fla., salesman, vice president. Cabinet members, as announced this week, include T. F. O'Keefe, Freeport, N. Y. (New York distributorship); R. M. Hall, Martinsburg, W. Va. (Norfolk distributorship); W. W. Lewis, Roanoke, Va.; J. E. Pemberton, Pawtucket, R. I. (Boston distributorship); O. E. Ross, Davenport, Iowa; W. J. Laperouse, Galveston, Tex. (Houston distributorship); George McMullen, Mitchell, S. D. (Sioux City distributorship); and P. D. Sims, Lovell, Wyo. (Billings, Mont., distributorship).

Dealers, supervisors and salesmen make up the delegation of 200 which will come here from all sales districts of the United States. Private cars and in one instance a special train will bring the visitors to Dayton. The first arrival will be from Denver, Colo., at 7:17 a. m. and during the next two hours cars from various sections of the country will roll into the Dayton station.

Announcement was made that H. W. Newell, new vice president in charge of sales of Frigidaire Corp., will make his first appearance in his new capacity before a group of selling men when he talks at the annual banquet Thursday night. C. A. Copp, assistant general sales manager, also will be on the speaking program.

E. G. Biechler, president and general manager, will open the congress Thursday morning with his "keynoter" address. Officers of the congress will be installed by H. C. Jamerson, sales manager of the household division and chairman of the arrangements committee.

"Senator" Edward H. Ford, former vaudeville humorist, will be one of the attractions at the banquet. In addition there will be a metropolitan musical revue, which will be brought to Dayton especially for the event.

An engineering demonstration will be staged for the visitors on the second day by E. B. Newill, vice president in charge of engineering, and E. D. Doty, advertising manager, J. J. Nance, manager of the sales planning division, and B. J. Vandoren, commercial sales manager will appear on the afternoon program. C. R. Godfrey, vice president in charge of production, will speak at a plant luncheon.

Membership of the B.t.u. Quota Club at this Congress includes: Miles J. Watson, Oberlin, Ohio; R. W. Hotchkiss, Grand Rapids, Mich.; R. Carrothers, Grand Rapids, Mich.; Walter Thaning, Buchanan, Mich.; Earl D. Meyer, Syracuse, N. Y.; S. C. Hitchcock, Rochester, N. Y.

D. J. Kresser, Rochester, N. Y.; Frank Cook, Geneva, N. Y.; G. Ruoff, Gloversville, N. Y.; O. E. Ross, Davenport, Iowa; L. A. Willett, Davenport, Iowa; B. M. Winsberg, Green Bay, Wis.; J. M. Smith, Milwaukee; M. R. Williams, Delavan, Wis.; C. E. Kinney, Madison, Wis.; W. J. Baker, Okmulgee, Okla.

L. L. Silkenson, Galveston, Tex.; W. J. Laperouse, Galveston, Tex.; B. C. Duffie, Houston, Tex.; I. C. Bell, El Paso, Tex.; E. M. McLaughlin, El Paso, Tex.; John Hunter, Brownsville, Tex.; E. J. Deckert, Llano, Tex.; J. E. Holden, San Antonio, Tex.; Emory E. Fry, Marshall, Tex.; J. T. Blailock, Dallas, Tex.

J. H. Orbison, Dallas, Tex.; L. B. Rogers, Bowling Green, Ky.; D. M. Crandall, Lorain, Ohio; P. J. Barnaby, Dayton; L. E. Grubbs, Louisville, J. R. Miller, Detroit; S. C. Nowak, Detroit; J. J. Schweitzer, Sandusky, Ohio; O. W. Scott, Zanesville, Ohio; Harry Benbow, Anderson, Ind.; J. J. Shanesy, Troy, Ohio; Glenn Rogers, Anderson, Ind.

E. A. Russell, Middlesboro, Ky.; J. W. Lawson, Jr., Bowling Green, Ky.; K. W. Cooper, Dayton; Paul Shroyer, Dayton; Dan Anslinger, Miamisburg, Ohio; R. M. Hall, Martinsburg, W. Va.; John C. Dwyer, Norfolk, Va.; B. G. Appleby, Portsmouth, Va.; Clem Goodman, Fredericksburg, Va.; Frank R. Young, Niagara Falls, N. Y.

Harold Rahn, Buffalo, N. Y.; W. W. Lewis, High Point, N. C.; H. A. Richardson, Martinsville, Va.; Lee C. Goodwin, Durham, N. C.; J. B. Connolly, Pittsburgh; M. J. Quinn, Braddock, Pa.; J. W. Barner, Washington, Pa.; M. Benowitz, McKeesport, Pa.; L. H. Meyers, Pittsburgh; William Mayfield, Pittsburgh.

J. E. McCullough, Wilkinsburg, Pa.; R. N. Soper, Pittsburgh; George D. McCormick, Midland, Tex.; J. Paul Anderson, Ft. Worth, Tex.; M. S. Nicholson, Ft. Worth, Tex.; Sam B. Anderson, Wichita Falls, Tex.; W. O. Luttrell, Galesburg, Ill.; F. L. Hazen, Peoria, Ill.; F. E. Kunz, Springfield, Ill.; Jay Gordon, Chicago.

I. J. Kristufek, Chicago; J. A. Theobald, Chicago; H. O. Wilson, Chicago; Hughes Gemmill, Chicago; Daniel Garrity, Wheaton, Ill.; H. Gibbs, Chicago; M. J. Goldstone, Chicago; H. G. King, Hammond, Ind.; J. Schwartz, Far Rockaway, L. I.; W. H. Morrison, New York; S. W. Brown, New York; H. W. Bush, Elizabeth, N. J.

G. Brooks, Somerville, N. Y.; John W. Kelley, Perth Amboy, N. J.; J. E. Pemberton, Pawtucket, R. I.; H. W. Wilcox, Pawtucket, R. I.; J. A. Preston, Burlington, Vt.; L. J. Marco, Franklin, Mass.; F. M. Connors, Seymour, Conn.; E. S. Petras, New Milford, Conn.; E. E. Deneault, Greenfield, Mass.

C. H. Arnold, Boston; E. M. Felch, Pawtucket, R. I.; R. P. O'Hanley, Malden, Mass.; E. C. Edwards, St. Albans, Vt.; T. F. O'Keefe, Freeport, N. Y.; J. L. Brown, New York; C. W. Young, Elizabeth, N. J.; A. Israel, Floral Park, L. I.; A. M. Nugent, Middletown, N. Y.; C. Enright, Hollis, N. Y.

R. S. Billhimer, Flushing, L. I.; A. H. Coons, New York; M. Stryker, Brooklyn; W. M. Baker, Brooklyn; H. M. Roff, Dover, N. Y.; C. F. Reuel, Hollis, L. I.; M. Ferentz, Woodside, L. I.; J. H. Gilbo, Port Henry, N. Y.; C. A. Fricke, Jamaica, N. Y.; P. Mojzis, Brooklyn.

E. J. Donnelly, Far Rockaway, L. I.; E. W. Johns, Billings, Mont.; C. E. Brown, Powell, Wyo.; P. D. Sims, Lovell, Wyo.; F. B. Hartney, Denver; C. R. Johnson, Alamosa, Colo.; L. E. Terry, Boulder, Colo.; Guy A. Graves, Kansas City; Vincent Heartney, Maryville, Mo.; J. F. Gibbens, Hastings, Nebr.

H. E. Bellard, Omaha; Val Weiler, Jr., Omaha; H. M. Farrell, Hastings, Nebr.; J. C. Hansen, Sioux City, Iowa; C. M. Landan, Sioux City, Iowa; George McMullen, Mitchell, S. D.; Norman R. Greer, Richmond, Calif; Fenner C. Fuller, Modesto, Calif.; Frank L. Pollard, Oakland, Calif.; R. E. Drew, Fresno, Calif.; Lee Shirar, San Francisco.

C. E. Pembroke, Las Vegas, Nev.; Arthur K. Brennan, Compton, Calif.; Frank James, Pasadena, Calif.; C. M. Buckingham, Los Angeles; Arthur Roach, El Centro, Calif.; E. W. Heckart, Corvallis, Ore.; M. C. Johnson, Klamath Falls, Ore.; J. W. Saunders, Seattle; Charles A. Rankin, Yakima, Wash.; J. T. Watts, Washington, D. C.

M. L. Hunter, Washington, D. C.; E. J. Brosseau, Washington, D. C.; C. W. Kenner, Washington, D. C.; R. C. Griffith, Baltimore; A. G. Cooper, Philadelphia; J. L. Hosler, Hershey, Pa.; F. Kilburn, Morristown, Pa.; F. A. Gould, Reading, Pa.; L. J. Knight, Trenton, N. J.; H. M. Wilson, Philadelphia.

F. S. Peddle, Upper Darby, Pa.; C. H. Wolff, Philadelphia; C. H. Brown, York, Pa.; Cecil E. Kirby, Miami, Fla.; George W. Mann, West Palm Beach, Fla.; H. G. Knapp, Miami, Fla.; Fred J. Girty, Richmond, Ind.; C. B. Marvel, Terre Haute, Ind.; R. E. Bankert, Indianapolis; R. S. Hayes, Indianapolis; C. E. Wildberger, St. Louis.

Nick Crouch, St. Louis; B. Eddings, Belleville, Ill.; H. C. Lochhead, Chester, Ill.; O. W. Lyerla, Herrin, Ill.; Harold Henly, St. Paul; Sewall Lehman, Minneapolis; James Storm, Minneapolis; Russell E. Spear, Minneapolis; G. B. Barnett, Joplin, Mo.; O. L. Markham, Webb City, Mo.; L. J. Woltman, Liberal, Kan.

V. M. Nichols, Wellington, Kan.; Jack Hodges, Baton Rouge, La.; M. W. Baird, New Orleans; D. E. Boozer, Augusta, Ga.; A. G. Bennett, Daytona Beach, Fla.; G. W. Harrison, Columbia, S. C.; W. J. Reusing, Asheville, N. C.; D. D. Major, Hattiesburg, Miss.; J. F. Blackford, Montgomery, Ala.

Claude H. Wolf, Orlando, Fla.; H. M. Lipscomb, Lakeland, Fla.; A. L. Jordan, Columbia, Tenn.; G. W. Trask, Nashville, Tenn.

Perhaps
YOU'D LIKE TO BE THIS MAN
. . . He's a Servel Commercial Electric Refrigeration Dealer

HIS business today is sound, healthy.

He came through the trying times of 1930 and 1931 with a net profit that would have done credit to the brightest "boom" days.

His salesmen have been producing—summer and winter—without seasonal let-up. He expects to break all records for volume of sales in 1932.

* * *

When he set out, eighteen months ago, to tackle a different line of business—he was confronted by the same problems that possibly face you now—shrinking sales and decreasing volume.

So he set out to find a product in this industry that offered potential buyers most for their dollars.

His success with SERVEL Commercial Electric Refrigeration is no miracle. It is the logical reward of tackling a rich, expanding field with the product most ideally fitted to meet every requirement.

* * *

Perhaps, your business needs the stimulus of this vigorous new line. Perhaps, your volume and your sales can be strengthened through the addition of SERVEL Commercial Electric Refrigeration.

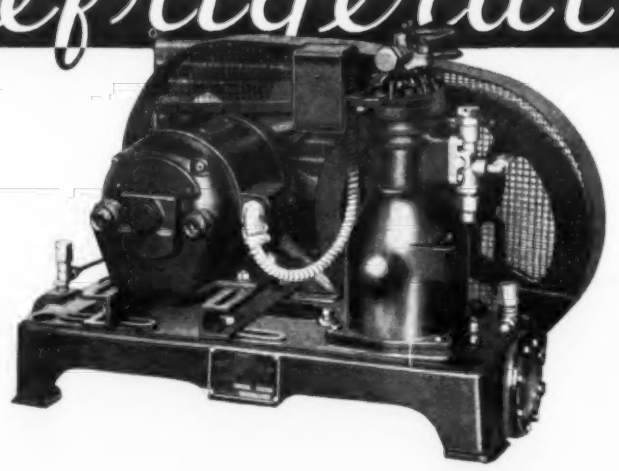
More than ever before, a SERVEL Franchise offers you the profit-combination of a virtually untouched market and the product best suited to dominate that market.

If you care to have further information, a letter will bring you interesting facts about SERVEL.

It will not obligate you in any way to determine whether or not the profitable SERVEL Franchise is still available in your city.

Simply write today to Servel Sales, Inc., Evansville, Indiana.

Refrigeration + Plus !



SERVEL
COMMERCIAL
REFRIGERATION

CROSLEY OUTLETS ENDORSE REFRIGERATION LINE

(Concluded from Page 1, Column 3)

magazine advertising and cooperative advertising in local newspapers.

Those distributors who have been handling other makes of electric refrigerators will keep their present sales organizations intact, they declared. Crosley distributors who have not sold refrigerators before were advised to hire "refrigeration specialists" to conduct this new division of their operations.

Mr. Johnston announced that a service school will be held at the factory in Cincinnati soon for service men retained by the various distributors.

Both the 4½-cu. ft. box and 5½-cu. ft. models, which retail for $139.50 f.o.b. Cincinnati, were displayed at the Crosley booth in the Chicago Radio and Electrical Show and at Crosley headquarters in the Congress during the distributors' meeting.

CHICAGO MAJESTIC OUTLET SELLS ONLY REFRIGERATORS

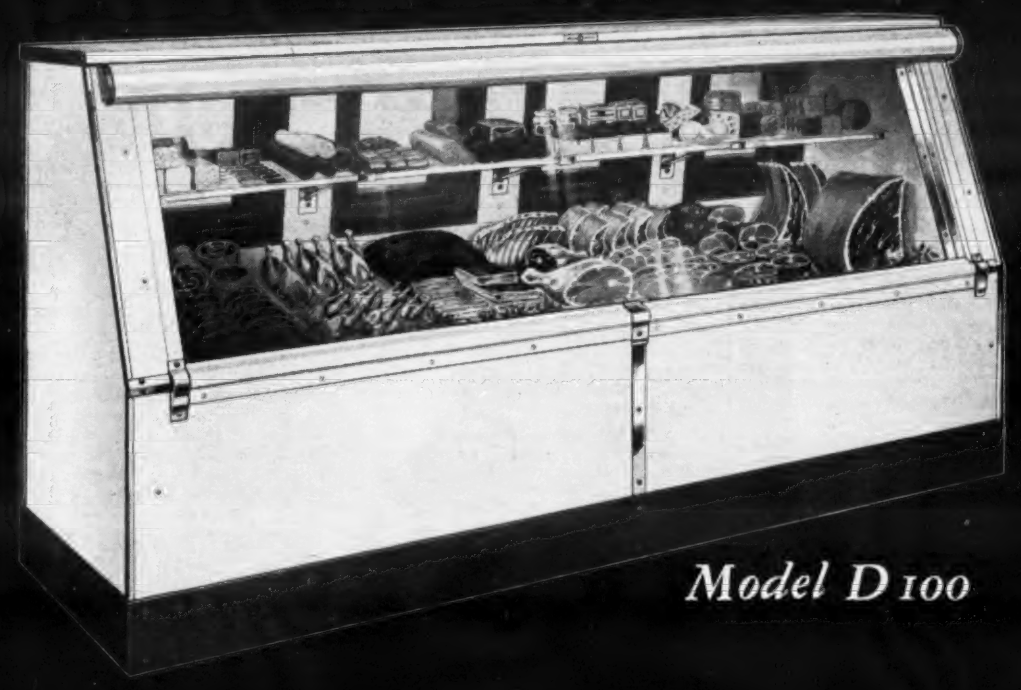
(Concluded from Page 1, Column 1)

salesmen will sell Majestic refrigerators to apartment houses, banks, office buildings, etc.

No retail sales will be made by the Alter organization. Max Geisler, Alter's advertising and sales promotion manager, has been appointed to direct activities of the dealer sales division. Under him will work some 30 dealers in Chicago and 75 dealers in surrounding suburbs, all selling to homes.

NOW WASHED AIR FORCED CIRCULATION

end commercial refrigerating problems



Model D 100

KEEPS FRESH FOODS FRESH FOR DAYS

ENDS TRIMMING OF MEATS & VEGETABLES

COOLS FOODS FIVE TIMES AS FAST

COSTS 25% LESS TO OPERATE

NO ODOR TRANSFER

BY eliminating the necessity of trimming meats and vegetables, the new General Electric Conditioned Air Commercial Refrigeration solves the most perplexing problems of bulk food preservation. And in addition, Conditioned Air Refrigeration reduces *by half,* the shrinkage occuring in fresh meats stored over a period of days.

Clean, cooled air . . . washed five times every minute . . . is circulated *by force* to every part of the cabinet or display case. Passing over and around all foods, it completely eliminates any possibility of odor or taste transference. Foods cool five times as quickly in Conditioned Air cabinets.

Proper temperatures and humidity are constantly and automatically maintained. Science has established the ideal condition for perfect food preservation to be 36°-40° Fahr. temperature, with relative humidity of 80%-85%. Conditioned Air Refrigeration preserves this condition always.

Yet Conditioned Air Refrigeration costs 25% less to operate than any other method of bulk food preservation! And every model, in storage cabinet and display case alike, has the famous G-E sealed-in-steel compressor mechanism . . . carries the G-E written Guarantee against any service expense for 3 years!

Conditioned Air Refrigeration is available in storage cabinets and display cases; either as a "packaged unit" or for remote installation . . each opening to the General Electric dealer a vast new field for year 'round NET profits.

General Electric Company, Electric Refrigeration Department, Section DF 12, 1400 Euclid Avenue, Cleveland, Ohio.

conditioned air

GENERAL ELECTRIC

COMMERCIAL REFRIGERATION

125 WHOLESALE MEN MEET AT KELVINATOR

DETROIT—Nearly 125 wholesale men working under Kelvinator distributors from all sections of the United States attended a three-day session at the Kelvinator factory on Jan. 14, 15, and 16.

The Kelvinator program for 1932 in advertising and sales promotion was discussed for the benefit of these men by Kelvinator officials.

Registrants Listed

Registration at the school was as follows: J. C. Abbott, of the Tri-State Electric Co., Sioux Falls, N. D.; F. R. Akey, Central Electric Co., Green Bay, Wis.; George C. Baich, Standard Talking Machine Co., Pittsburgh; F. L. Balthazor, Morley Murphy Co., Milwaukee; D. R. Bates, Boston branch, Boston.

R. C. Bitting, Philadelphia branch; A. J. Bodenmuller, New York branch; J. F. Brunner, J. E. Dilworth Co., Memphis, Tenn.; Bill Brunson, Newt Brunson, Austin, Tex.; B. F. Burkholtz, Morley Murphy Co., Milwaukee; Clifford Calhoun, Morley Murphy Co., Milwaukee; W. M. Calhoun, Morley Murphy Co., Milwaukee.

O. W. Clark, Kelvinator-Flint, Flint, Mich.; Mr. Clemons, G. S. Blodgett Co., Burlington, Vt.; C. B. Cowles, Tom Cooper Motor Co., Oklahoma City, Okla.; H. J. Darch, Meachem-Fenn Corp., Syracuse, N. Y.; C. W. Death, Kelvinator-Kimmell, Jacksonville, Fla.; E. L. Decker, Boston branch; G. A. Dixon, Dix-Bowers Co., Norfolk, Va.

W. A. Dorsey, Earle Rogers Co., Wheeling, W. Va.; M. L. Dougherty, Kelvinator Corp., St. Louis; K. M. Druffner, Graybar Electric Co., Atlanta, Ga.; Walter Eigelbach, Stratton Terstegge, Louisville, Ky.; H. C. Elliott, New York branch; J. L. Farbrother, Kelvinator-Flint, Flint, Mich.; H. E. Fisher, New York.

Harry Frank, Tri-State Electric Co., Sioux Falls, N. D.; M. W. Fuller, Boston branch; C. E. Furber, Graybar Electric Co., Minneapolis, Minn.; W. L. Garrett, Williams Hardware Co., Clarksburg, W. Va.; B. C. Gregerson, Tri-State Electric Co., Sioux Falls, N. D.; Carl Haller, Graybar Electric Co., Cincinnati.

M. S. Hamilton, Philadelphia branch; O. J. Hamm, Washington Supply Co., Peoria, Ill.; J. E. Hardwick, Standard Talking Machine Co., Pittsburgh; C. A. Harris, Western Kelvinator Co., Kansas City, Mo.; A. B. Hopkins, Graybar Electric Co., Omaha, Nebr.; W. W. Huffman, Williams Hardware, Clarksburg, W. Va.; R. Hussey, Hagerstown, Md.

E. J. Jahreiss, Graybar Electric Co., Minneapolis, Minn.; A. V. Joly, Carter Sales Co., Corpus Christi, Tex.; J. R. Jones, Jones-Corenett Electric Co., Welch, W. Va.; R. J. Jones, Star Electric Co., Erie, Pa.; J. E. Keating, Central Electric Co., Green Bay, Wis.

D. J. Keefe, Graybar Electric Co., Minneapolis; W. J. Kelly, Albany Garage Co., Albany, N. Y.; H. S. King, Meachem-Fenn Co., Syracuse, N. Y.; C. I. Kinsey, Graybar Electric Co., Atlanta, Ga.; Otto Klann, H. E. Sorenson Co., Des Moines, Iowa; R. M. Knight, Philip Werlein, New Orleans, La.

C. J. Laufersweiler, Kelvinator, Buffalo; E. C. Lloyd, Standard Talking Machine Co., Pittsburgh; E. B. Lyons, same firm; S. A. Maxwell, Tom Cooper Motor Co., Oklahoma City, Okla.; Elmer Meyer, H. E. Sorenson Co., Des Moines, Iowa; C. A. Mickel, Graybar Electric Co., Atlanta, Ga.; E. R. Moats, Central Hardware & Factory Supply, Akron, Ohio; W. H. Moench, Kelvinator-Philadelphia Corp.; A. R. Morin, Tom Cooper Motor Co., Oklahoma City, Okla.; D. E Morris, Wichita-Kelvinator Co., Wichita, Kan.; J. L. Mulraney, Post & Lester, Providence, R. I.

F. J. McCarthy, Kelvinator, Buffalo; L. B. McCreary, Western Kelvinator Co., Kansas City, Mo.; L. B. McDonald, Tom Cooper Motor Co., Oklahoma City, Okla.; B. F. McNeil, Western Kelvinator Co., Kansas City, Mo.; J. R. Newman; H. A. Nigus, Post & Lester, Providence, R. I.; Carl Norland, Graybar Electric Co., Minneapolis.

W. J. Norris, J. E. Dilworth Co., Memphis, Tenn.; C. W. Oakley, Oakley & Oldfield, Kalamazoo, Mich.; William O'Brien, Albany Garage Co., Albany, N. Y.; P. A. Piron, Meachem-Fenn Co., Syracuse, N. Y.; H. S. Pope, Barber & Ross, Washington, D. C.; F. J. Poucher, John Van Benschoten, Poughkeepsie, N. Y.

E. V. Powers, Western Kelvinator Co., Kansas City, Mo.; E. E. Rawl, Carolina Kelvinator, Greenville, N. C.; W. A. Reist, Williamsport, Pa.; R. Richards, Jere Woodring, Hazelton, Pa.; R. E. Richwine, Kelvinator-Kelly, Harrisburg, Pa.; J. M. Robinson, H. E. Sorenson Co., Des Moines, Iowa.

A. F. Roemich, Kelvinator Corp., St. Louis; W. Russell, Standard Talking Machine Co., Pittsburgh, Pa.; R. Saal, Cleveland branch; B. Sahmkow, Ozark Motor & Supply Co., Springfield, Mo.; L. G. Sawyer, Meachem-Fenn, Syracuse, N. Y.; Otto Schadt, Service Ice & Coal Co., East Moline, Ill.; Alvin Scotten, Rackliffe Bros. Co., Inc., New Britain, Conn.

A. J. R. Seyfert, Central Electric Co., Green Bay, Wis.; Earl C. Sharpe, Graybar Electric Co., Minneapolis, Minn.; T. H. Skinner, Toledo Edison Co., Toledo, Ohio; H. P. Soule, Service Ice & Coal Co., East Moline, Ill.; J. A. Stockett, Graybar Electric Co., Omaha, Nebr.; C. P. Straat, Claude P. Street, Nashville, Tenn.

H. L. Tangent, Standard Talking Machine Co., Pittsburgh; H. A. Turner, Detroit branch, Detroit, Mich.; H. R. Turney, H. E. Sorenson Co., Des Moines, Iowa; J. H. Verba, Rackliffe Bros. Co., Inc., New Britain, Conn.; Ed Wallin, John Van Benschoten, Poughkeepsie, N. Y.; R. W. Waugh, Emmons-Hawkins Co., Huntington, W. Va.

J. R. Weaver, Graybar Electric Co., Cincinnati, Ohio; Frank Weber, Graybar Electric Co., Omaha, Nebr.; L. H. Wessell, New York branch; T. E. White, Philadelphia branch; C. B. Williams and Tom W. Williams, Stratton Terstegge, Louisville, Ky.; H. A. Wilson, Emmons-Hawkins Co., Huntington, W. Va.

Leo Wolf, Albany Garage Co., Albany, N. Y.; Harvey Wood, John Van Benschoten, Poughkeepsie, N. Y.; W. R. Zacharias, Werley's, Allentown, Pa.

Discuss 1932 Sales Plans

One hundred and twenty-five wholesale men working under Kelvinator distributors discussed 1932 sales policies with executives of Kelvinator Corp. in a conference recently held at the Detroit factory.

SERVEL GETS GOVERNMENT ORDER FOR 1,183 UNITS

WASHINGTON, D. C.—An order for 1,183 Servel refrigerators has been placed with the Servel factories to be installed in the United States Army Posts and Army and Navy Hospitals in the United States, Canal Zone, Philippine Islands, and Hawaiian Islands.

Among the points at which the refrigerators will be installed are: Army Medical Center, District of Columbia; Army & Navy General Hospital, Hot Springs, Ark.; March Field, California; Ft. Benning, Georgia; Randolph Field, Texas; Ft. Howard, Maryland; Albrook Field, Canal Zone; Manila, Philippine Islands, and Wheeler Field, Hawaiian Territory.

CHARTER LOUISIANA DEALER

BATON ROUGE, La.—The Electrical Refrigeration Co., Inc., parish of Orleans, has been chartered by the secretary of state. The capital stock is $3,000.

NORGE DISTRIBUTOR FOR THREE STATES APPOINTED

ATLANTA—Hopkins Equipment Co., 418 W. Peachtree St., has been appointed distributor of Norge electric refrigerators in Georgia, North Carolina and South Carolina, according to an announcement by W. D. V. Hopkins, president of the company.

Negotiations for the dealer franchise were made with Glenn O'Hara, of New York, eastern sales manager of the Norge Corp., and T. P. Hallock, of Jacksonville, Fla., manager for the manufacturer in the southeast.

The Hopkins Equipment Co. has been distributor for Atwater Kent radios in this territory for the last eight years.

SAN ANTONIO SALESMAN WINS G. E. TRIP

SAN ANTONIO, Tex.—J. L. Townsend left Jan. 18 for a trip to Havana, Cuba, as a guest of the General Electric Co. The trip was awarded as a prize for selling over $25,000 worth of General Electric refrigerators during 1931.

Other representatives from the southern division are: Earl T. Wood, El Paso; Val B. Mason, Houston; Lee A. Burns, Dallas, and L. L. Townsend, Oklahoma City.

Mr. Townsend is connected with the domestic refrigeration department of Wright Brothers Refrigeration Co. of this city.

ELECTROLUX FEATURED IN MODEL HOME

PHILADELPHIA—Electrolux refrigeration is one of the features in the "Model Home," sponsored by the Philadelphia *Record*, and open to the public at 326 Allen Lane, Mt. Airy, this city.

MICHIGAN'S ELECTRIC OUTPUT UNDER 1930

ANN ARBOR, Mich.—Michigan electric power companies produced approximately 3,870,000,000 kwh. or 5,185,800,000 hp. hours of electrical energy in 1931, according to compilations given out by the Utilities Information Bureau, here.

Fuels were used in generating 77.8 per cent of this total, and water power for the remaining 22.2 per cent.

Industrial conditions brought the demand for electric power below 1930, 1929, and 1928, but it continued ahead of 1927, a year which had broken all previous records. Gains were made in the domestic use of electricity and its use on the farms of the state.

Electric service was taken to a score of additional towns, and to some 4,000 farms. The end of the year found electricity serving 80 per cent of Michigan's homes and working on 17 per cent of Michigan's farms.

Michigan gas companies supplied approximately 33,530,000,000 cu. ft. of gas to the homes and industries of the state in 1931. Increases were recorded in the number of industries using gas and in the number of domestic customers using gas for house heating.

Natural gas was supplied to Midland, Mt. Pleasant, Clare, and Rosebush, with the extent of the Mt. Pleasant natural gas area still undetermined. Manufactured gas was given to 20 additional towns, bringing the total to 283.

Electric and gas utilities in Michigan plan to spend upwards of $17,500,000 on new construction during 1932. Of this, approximately $15,250,000 will be spent by the electric power utilities.

SEVEN DEALERS ADDED TO OKLAHOMA FRIGIDAIRE LIST

TULSA, Okla.—W. C. Dance, of Tulsa and Oklahoma City, state distributor for Frigidaire, announces seven new stores as local outlets for the distribution of this equipment.

The store at 708 S. Main St., will be closed and sales this season are to be handled through the Oklahoma Tire & Supply Co., Freed's Furniture Store, Hanna Lumber Co., and Rickard Electric Co., it was stated.

Mr. Dance will maintain offices and warehouse for the Tulsa district at Second and Cincinnati, and will continue to operate the service department and warehouse, he said.

J. J. Shea is Tulsa sales manager.

In the new arrangements worked out between Mr. Dance and Tulsa dealers, a central service department will be operated at 540 S. Lewis St., with Lee Golibart in charge. The latter has had seven years' experience in servicing Frigidaires.

SCRANTON LEONARD DEALER APPOINTED

SCRANTON, Pa.—Stoehr & Fister, local department store, has just taken on the Leonard electric refrigerator line, for which it has organized a special sales department.

Nationwide Success in Less than 3 Years
Now 25,000 LARKIN COILS Installed

SERVEL COMMERCIAL Electric Refrigeration

WILLIAMS ICE-O-MATIC REFRIGERATION BLOOMINGTON, ILLINOIS

UNIVERSAL DETROIT, MICH

Zerozone Lifetime Refrigeration

M&E Electric-Automatic REFRIGERATOR PHILADELPHIA

Absopure DETROIT, MICH.

DICELER

Apex CLEVELAND, O.

Manufacturers, Distributors and Dealers, we submit that the above statement speaks for itself.

A new basic idea conceived—a long awaited contribution to commercial refrigeration made possible.—Factory after factory quite properly make exhaustive tests of our claims. Then the adoption of LARKIN COILS as standard factory equipment.

Now, in less than 3 years' time over 25,000 Coils in use. Sales growing every day, proving conclusively our claims that Defrosting and Dehydration problems, the Service Bugaboo, and Cost of Operation are *reduced substantially* with LARKIN 100% Vertical Surface Aluminum Plate COILS and that all who make and sell Electric Refrigeration Equipment for commercial use present service and value features of outstanding merit when their product is LARKIN COIL equipped.

Why be at a sales disadvantage? Get facts and data from any manufacturer listed here or direct from the originator and sole manufacturer of LARKIN COILS.

93 Standard sizes in the greatest Coil Line in America make possible over 6,000 installation combinations.

100% VERTICAL SURFACE

U.S. PATENT No. 1,776,235.

LARKIN COILS

LARKIN-WARREN REFRIGERATING CORPORATION

Originators and Manufacturers :: :: ATLANTA, GEORGIA

Copeland DEPENDABLE Refrigeration DETROIT, MICH.

TRUPAR DAYTON.-OHIO

B-K, Junior New Brunswick, N.J.

KULAIR PHILADELPHIA, PA.

Modern

ELECTRIC RICE REFRIGERATORS

STARR FREEZE Electric Refrigeration

No Engineer's Slide-Rule Can Subtract from the Electric Meter's Verdict

An open letter to manufacturers of good electric refrigerators:

"The slide-rule is the engineer's crony, with whose aid he makes intricate and dependable calculations. But even the slide-rule cannot subtract kilowatts from the count of the electric meter as it clicks off the power input to a refrigerator in a home perhaps a thousand miles from your laboratory.

"Yet in that home the final, vital engineering test of your refrigerator is given. What the meter records, the inspector reports. Eventually kilowatts become dollars and cents on the bill—no strange engineering formula to the housewife. If that bill mounts steadily month after month of refrigerator use, she knows it. And nothing can be more utterly final than her judgment of the performance of your refrigerator.

"So the electric meter **must** figure in your calculations.

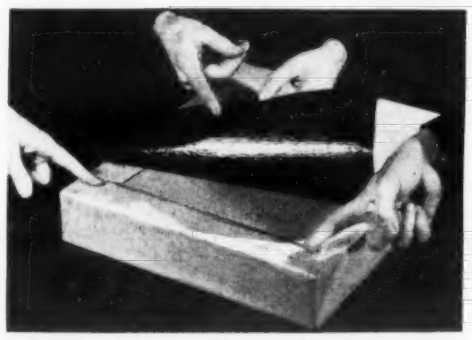
"Most compressors are now over-size, though this will not be so for long. Competition will soon fix that. Then you will use a compressor that provides just the necessary degree of heat absorption. And a motor that balances the power demand. But remember that the motor will whirl and the compressor pump until enough heat is absorbed.

"How long it whirls during the month—the meter tells. How long it **must** whirl to maintain the proper temperature depends upon the food requirements—**and the insulation in the refrigerator.** About the first you can do nothing. Of the second you can be certain.

"Dependable, authoritative tests tell you the efficiency of insulants. Pencil, slide-rule and mathematics give you the thicknesses, quantity and costs. You can be as accurate and as certain as you please. But you cannot scrimp and get away with it for long. No engineer can beat the electric meter.

"That is why Dry-Zero Pliable Slab insulation is a vital part of so many refrigerators."

"I guess some of these electric refrigerators sure make good business for the light company."



Only Dry-Zero Sealed Slab has this vapor seal. More than a mere wrapping in asphalt paper, it is the most perfect vapor seal known to the insulation industry.

Facts about Dry-Zero

Dry-Zero is made from the fibres of the huge seed pods of the Ceiba tree, growing in Java and the South Sea Islands. Nature designed these fibres to carry seeds for long distances through humid air and tropical showers. To do this, it was necessary that they be light and completely resistant to moisture.

By an ingenious process of "graining," the fibres are laid parallel with each other, and at right angles to the line of heat flow. This results in greatly increasing the resistance to heat movement through the minutely uniform batt thus formed.

For use in refrigerators, the Dry-Zero batt is placed in treated fibre-board containers made exactly to fit a specified position in the refrigerator. These sizes are carefully checked by templates to assure perfect fitting, although the flexibility of the slab allows for common irregularities of cabinet construction.

The slabs are completely wrapped in a special Kraft paper, which has been thoroughly coated with an asphalt made specifically for Dry-Zero and rolled on under heat and pressure. This results in the Dry-Zero Sealed Slab, which has the most perfect vapor seal that has been developed in the insulation industry.

Where cabinet construction permits, the outer Dry-Zero sealing sheet extends beyond all sides of the slab, providing the exclusive vapor tight sealing flange.

The U. S. Bureau of Standards has published the conductivities of various insulating materials. In this table, the efficiency of Dry-Zero insulation is found to be from 12½% to 40% higher than the other refrigerator insulating materials. Bear in mind that these figures are authentic and not the claims of manufacturers.

In other tests, for moisture absorption, notably by Prof. Miller of the University of Minnesota, Dry-Zero has been shown to absorb a far smaller quantity of moisture than any of the other leading materials. Further, as moisture will inevitably penetrate any refrigerator wall in time, it is well to know that it will have practically no effect on Dry-Zero, which is unique in this respect.

Its use in thousands of domestic refrigerators, ice cream cabinets, solid CO_2 containers, railroad refrigerator cars and refrigerated trucks over a long period has proved beyond doubt the permanence and dependability of Dry-Zero.

DRY-ZERO CORPORATION
Merchandise Mart - Chicago, Illinois
Canadian Office - 465 Parliament St., Toronto

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

DRY·ZERO

14 Women Finish Kelvinator's Course In Home Economics Training

DETROIT—Fourteen women comprised the first 1932 class in home economics and electric refrigeration training which met in the Kelvin Kitchen of the Kelvinator Corp. last week.

George R. Cullen, publicity manager, John S. Garceau, assistant sales promotion manager, and George Wilcock, editorial writer in the sales promotion department, gave speeches before the class.

Marion Sawyer and Gertrude P. Janssen, Kelvinator factory home economists, gave the instruction. Miss Sawyer lectured on "The Science of Refrigeration," and "Formation of Frozen Recipes," and Miss Janssen on the organization and operation of a home economics department, and on "Cooking with Cold" demonstrations.

Miss Sawyer lectured to the class on food spoilage and methods of checking bacterial growth; on the theory of refrigeration; and on the construction of various types of cabinets and cooling units. She also explained how to use and care for a Kelvinator.

Miss Janssen covered the recent Kelvinator sales promotion literature in one of her talks, as well as discussing the type of equipment, i. e., the uniforms, utensils, and kits that the home economics department may use.

She spoke on the various activities of home economics managers, including home service calls, home and public demonstrations, etc.

The class took examinations on the material covered, and "cooked with cold" in the Kelvin Kitchen.

The classes are a feature of the Kelvinator 1932 sales promotion program, and are attended by managers of the home economics departments of Kelvinator distributors, in order that methods may be standardized and made more efficient.

Those attending this class were: Florence Williams, Graybar Electric Co., Omaha; Dorothy Thomsen, Cleveland factory branch; Lucille W. Ross, H. E. Sorenson Co., Des Moines, Iowa; Dorothy Butler, Kelvinator-Flint, Flint, Mich.; Alice Genaway, Meachem-Fenn Co., Syracuse, N. Y.

Dorothy Covert, newly appointed member of the Kelvinator factory home economics staff, who comes from the Westinghouse Electric Co., Omaha, Nebr.; K. B. Peterson, Morely-Murphy Co., Green Bay, Wis.; Elizabeth Bruder, New York factory branch; Irene Tindall, Earle Rogers Co., Wheeling, W. Va.; Clara Raymond, Graybar Electric Co., Minneapolis.

Mabel Gordon, Kelvinator-Buffalo, Buffalo, N. Y.; Marie Turner, Western Kelvinator, Kansas City, Mo.; Pauline Peacock, newly appointed member of the Kelvinator factory home economics staff, who comes from the Chitwood School of Cookery, Dallas, Tex.

MAJESTIC DISTRIBUTOR HOLDS 'OPEN HOUSE'

TULSA, Okla.—The Harrison Smith Distributing Co. of Oklahoma City, which handles Majestic products in this territory, held "open house" at the Alvin hotel, here, 10 o'clock in the morning to 9 o'clock at night, Tuesday, Jan. 19.

Majestic dealers from the eastern half of the state viewed the new line of Majestic products and heard the sales and newspaper advertising plans for the coming season.

How To Operate a Distributorship

As Told By Ken Baxter, President, New York Copeland Co.

By Phil B. Redeker

NEW YORK CITY—Ken Baxter, youthful president of the New York Copeland Co., is an executive who believes that he can best obtain results from *men* by creating jobs for them which present both an opportunity and a responsibility, and then allowing them to go about their work with a maximum of backing and a minimum of supervision.

The New York Copeland Co. sold more Copeland refrigerators in 1931 than any other distributing organization, and the organization will show a gain of better than 70 per cent over the total number of refrigerators it sold in 1930, lending proof of the effectiveness of Baxter's idea of giving the individual greater responsibility and greater opportunity.

Take, for instance, the set-up of the retail household department, managed by W. C. Mallory. The department is organized on a unit plan, each unit being the separate organization built around a neighborhood store.

"The sales manager or sub-sales manager is generally recruited from the ranks of the salesmen," Baxter points out. "He may have been only a salesman of ordinary caliber, but as a store manager with a greater job to lick there is a pretty good chance that he will step up to the task of licking it."

There are no "closed" territories in the retail sales organization, in keeping with Baxter's idea of placing the burden of selling on individual initiative. The entire city is "wide open" and it is literally true that the best man wins.

"It is not always the first salesman who can sell a prospect," Baxter points out. "Very often a sale will be consummated by a second salesman's call, and we feel that we have saved a lot of sales by not 'closing' the territories."

The New York Copeland Co. is operating 17 of these stores located in central trading areas in New York City proper at the present time, and, according to Baxter, plans are being made to increase the number of stores to 30 sometime this spring.

Each store has a showroom and offices and in addition to the manager and sub-manager, approximately 10 salesmen work out of the store, the number of salesmen being increased upwards to 20 during the peak months.

The hiring and training of retail domestic salesmen is a type of work which Mr. Baxter believes should be left to the store manager.

"While we have a central bureau which hires salesmen, we believe that it is best for the store manager to hire his own men, because he will then feel responsible for getting results from them."

Training of Salesmen

Salesmen are trained right in the retail store, Mr. Baxter using two men who *go out* and help these men in the field, rather than bringing them to a central school.

Men without previous experience in the refrigeration game are generally preferred, because, as Baxter points out, they have no inhibitions about their business.

Example: since they have probably never heard the old buncombe about the impossibility of selling refrigeration in the winter time, they go right out and sell them in the cold months, while old-timers in the game are likely to go into hibernation for a couple of months.

"We try to pick men who have the spark and the qualities necessary for specialty selling," says Baxter. "There are some men of the 'white collar' type who just aren't fitted for retail selling, and it is fairly easy to distinguish between such a man and the one who was 'born to sell.'"

The apartment house division is organized along lines quite different from that of the retail domestic department—but the same spirit prevails.

Fred S. Cozzens, who has been with the Copeland organization since 1924, has a group of high-grade, sophisticated salesmen who "know their way around" with building companies, architects, finance companies, loan and mortgage firms, and other types of organizations which are the major sources of apartment house prospects.

Cozzens has led these men to record breaking sales operations by catering to their sophistication, and by inspiring them through the example of his own work and straightforwardness.

Apartment House Division

Three supervisors work under Apartment House Manager Cozzens, one heading the work in Brooklyn, another has his place in Manhattan, while the third has charge of the Bronx division. The sales force is divided into senior and junior salesmen, but this division does not mean that all the salesmen aren't selling or that some of the force are merely "contact" men.

The word "contact man" is disliked by his organization, Baxter says. To illustrate his antipathy for the term, he tells the following story:

Two salesmen come into the home office to check in after a day's work in the apartment house field.

Says the first salesman: "Well, I made a lotta nice contacts today."

Replies salesman No. 2: "I didn't sell anything, either."

Each salesman gets his own prospects, and goes out to close his own sales, and therefore develops a feeling of confidence that it is *his own* work that is bringing success to him in the refrigeration game. There are about 25 apartment house salesmen employed.

The retail commercial department is in fact, three departments, one being for Manhattan and the Bronx, under the management of A. Rosmarin; another for Queens, under the management of W. G. Gardner, and a third for Brooklyn, this one managed by J. B. Breen.

Each department of the retail selling organization has the orthodox personnel set-up of manager, supervisors, and senior and junior salesmen. Baxter believes in giving his men all the "title" possible, as he believes that it is a distinct aid to them in impressing the prospect as well as proving a boost to their morale.

Commercial salesmen are selected who seem best fitted for the type of selling which they are to do (that is, to concerns dealing in foods) and also who are most interested in the commercial sales proposition.

A separate retail dealer's department is operated by the New York Copeland Co., under the direction of B. R. Barker, manager, and Walter Tripp, assistant manager.

There are two types of Copeland dealers operating in New York, one being those in the city proper and the second type constituting the suburban merchandisers.

Those operating in the city are more or less "sales" dealers, functioning solely as selling units for the larger Copeland organization, which handles all their shipments and detail work. Outside of New York City proper, however, the dealer operates in the regular type of set-up.

"We select dealers who will best fit into the refrigeration sales picture," says Baxter, in speaking on the selection of dealers. "You can't get good dealers merely by sticking pins in a map which has been prepared by some expert on marketing and merchandising trends.

"It isn't always the dealer who has been a success with some other line such as pianos or radios or oil burners that will make the good refrigeration dealer. We like firms with experience in the specialty merchandising field, but what we look for most is a *type of man* who will be most likely to grasp the opportunity presented.

"We don't make any attempt to load the dealers up with a staggering quota at the beginning of each year. Rather, we prepare a *budget*, showing them the amount of business which we think they can do, and the amount of profit that they will obtain through such a business.

"In other words, we do not stock them up with a lot of boxes, but we encourage them to do the business of which they are capable by showing them how it may be done, and by making clear the profits which they can get out of the refrigeration business.

Dealer Treatment

"A floor display and a sign is required of the dealers, and it is possible that we may make some requirements as to the number of salesmen they employ this spring.

"It is my personal belief that better results can be obtained by treating the dealers *as business men*, and by being perfectly frank and fair with them, than by adopting a paternalistic attitude," Baxter sets out.

Baxter is very enthusiastic over the work which is being done by his service department, headed by Frank L. White, who is a five-year Copeland veteran.

District service men travel in fully equipped automobiles. They are sent out on calls from the various branch offices by a telephone dispatcher who routes them to their destination.

"The spirit in this department is as high as in any of the sales departments," Baxter says. "A *callback* (second call by a party asking for service) is looked upon as a *disgrace*.

"Contests are held between various sections of the service department to create greater efficiency and speed.

There are two other divisions under service—the mechanical department which includes the installation and warehouse men, and the engineering division which carries out the preliminary estimating and checkup work.

All financing and accounting is handled by the administrative department in the central offices. L. H. Buhs, treasurer of the New York Copeland Co., heads this department.

All the members of the sales force are paid on a straight commission basis, according to Baxter, although some of the managers and senior salesmen work on drawing accounts.

Contest Plans

Although he uses no regular "bonus" system, Baxter uses an idea in the form of a contest to stimulate work on the salesman's part which is very similar to the bonus plan. He sets a certain mark and any salesman passing it bags a prize.

The *competitive* inter-departmental or intersectional contest, with added individual cash prizes for high individual salesmen, is about the most effective, Baxter says. In a recent contest between three departments, the winners dined on a seven-course dinner, while the two losing departments also ate a seven-course dinner—consisting entirely of beans.

Baxter believes that the user constitutes the finest source of prospects, and much of the salesmen's and service men's time is devoted to cultivating the user. In addition to their cold canvassing, the retail domestic salesmen spend part of their time directly contacting the user. In addition, the Copeland User's Bond is utilized.

The central office cooperates with suburban dealers in carrying out local advertising, and in advertising the commercial line in trade papers. Plans are being made for the extensive use of road signs during the coming years.

Direct mail finds a large use in the apartment house and commercial fields, Baxter points out.

In apartment house work direct mail is fired in a steady stream to corporations who will be most likely to purchase refrigeration, as a process of *educating* them to advantages of the Copeland line.

In the commercial field the direct mail literature is designed to influence the prospect who has shown a marked interest in the purchase of refrigeration. Wherever advertising or sales promotional work is done, it is carried out in an intelligent and directed manner to reach a definite end.

New Low Prices

on

Panelyte Frost Breaker Strips

• Absolutely Odorless •

Now available in a wide range of colors and various wood finishes.

Used exclusively by all the leading manufacturers of refrigerator cabinets.

Panelyte is used for breaker strips on the cabinet of this modern electric refrigerator built by the Gibson Refrigerator Corp. of Greenville, Mich.

The new low prices of completely fabricated Panelyte Frost Breaker Strips made of genuine Odorless Panelyte now make it possible for all refrigerator and ice box cabinet manufacturers to use this beautiful permanent finish material at practically no increased cost over wood or other inferior materials.

Write or wire for quotations today

PANELYTE CORP. 60 East 42nd Street NEW YORK CITY

KELVINATOR

There are 18 reasons why

There are 18 reasons why Kelvinator will be the most desirable and the most "sought after" Sales Agreement in the Industry in 1932! Responsible Merchants now in the business, and those contemplating electric refrigeration, may have complete information about these 18 reasons upon request. Use either your own letterhead or the coupon below.

KELVINATOR CORPORATION, 14245 Plymouth Road, Detroit, Michigan

Kelvinator of Canada, Ltd., London, Ontario — Kelvinator Limited, London, England

C O U P O N

Kelvinator Corporation, 14245 Plymouth Road, Detroit, Mich.

Gentlemen:—

Please send me complete information about the 1932 Line and the Kelvinator Full-Profit Franchise.

Name _____

Street Address _____

City _____ *State* _____

(460)

MANY BUSINESS MEN FAIL; DON'T KNOW WHY

WASHINGTON, D. C.—An analysis of bankruptcy records will show that many retail merchants fail in business without being able to give the causes, Dr. Julius Klein, Assistant Secretary of Commerce, said in a recent radio address.

"Far too many casualties in the business world, when called upon to explain their maladies, cite generalities such as unseasonal weather or chain store competition, doorbell ringing, peddlers or meddlesome bureaucrats, politicians, or plagues of grasshoppers," Dr. Klein said.

He pointed out that the depression has not materially increased the number of firms or individuals who failed in business. That number has been growing more or less steadily during good periods as well as bad ones. "In fact, there were actually fewer failures in the fiscal year 1930-31 than in the much better period, 1929-30.

"When, as post mortem examinations in the bankruptcy courts show, the bad debts of small grocers amounted to nearly two per cent of their total sales," he continued in talking about the losses of creditors, "it is evident that the utmost vigilance must be observed on their part to keep that percentage down.

"And the only way they can accomplish this is by rigorously careful periodic check-ups on that percentage of loss through delinquent credit accounts."

8 GENERAL ELECTRIC UNITS SOLD TO APARTMENT

ST. PETERSBURG, Fla.—Eight model PS-45 General Electric refrigerators were sold by S. G. Kent, apartment house salesman for George Patterson, Inc., of Miami, recently.

He Gets in the Wrong Fold; Is Welcomed

DETROIT—F. H. Fenn, of Meachem-Fenn Co., Kelvinator distributor of Syracuse, N. Y., registered at the Book Cadillac hotel, Sunday night, Jan. 17, for a stopover en route to Chicago on a business trip.

Monday morning he was awakened with the message, "Mr. Fenn, you are expected at breakfast. The Copeland convention is in session." Mr. Fenn informed them that he is a Kelvinator man. Three times the summons came, the last one just as he finished dressing.

"Since they are so insistent, by gum," said Mr. Fenn to himself, "I will go to breakfast with them."

The Book Cadillac was sold out to Copeland delegates with very few exceptions, one of them being Mr. Fenn. This is probably the reason why he was lured to the morning feast, at which he reported having a great time.

COPELAND DEALERS ISSUE BONDS FOR 10 PROSPECTS

MT. CLEMENS, Mich.—Profit-sharing bonds, complete with coupons to clip and green embossing, are being issued by Copeland dealers to buyers of household units. Each is worth $50.

To get the value from the bonds, the Copeland owner files with the dealer, names of 10 good prospects, each of whom she thinks might buy a Copeland within the next three months.

Whenever a sale is made to one of these prospects, the sum of $5 is given to the Copeland owner who submitted the prospect's name. Each of the 10 coupons on the bond holds the prospect's name and address, and the owner's name.

How To Sell Refrigerators

As Told By Carl Windel, National Champion Copeland Salesman

By Phil B. Redeker

DETROIT—Carl Windel of the V. J. Coughenour Radio Electric store at Springfield, Ohio, Copeland national sales champion, is one of those naturally gifted individuals who found the field to which his talents were best suited and then put everything he had into it.

"You've got to *like* the game," Carl says of specialty selling. "I like my work, I like to study it, to talk about it, to *live* it. I started out on it as an eight-hour a day job, now I'm working at it 16 hours every day and wishing that I didn't have to spend the rest of the time sleeping."

Cultivation of Friendship

Cultivation of friendships with the prospect on first canvass, solidifying that friendship while selling, and maintaining it once the prospect has become a user is Carl's main selling formula. His good looks, wide smile, quick wit, and sincerity give him a natural bent towards friendship making that make it the one major point in his sales method.

"Get to know your prospect," he propounds. "Learn his first name—if you can't call a prospect by his first name within a half hour after you meet him, you've done a pretty bum job.

"Discover the prospect's hobby, and make that your hobby for the moment. Pay attention to his children, his dog, the way in which his home is decorated. Answer his questions on radio or other electrical appliances that you might know something about.

"Forget about refrigeration for awhile, and concentrate on the prospect, on his interests."

It isn't enough to take an interest in the prospect *only* while *selling* him, Windel says. The smart salesman, he points out, will carry through with the prospect on the installation of the equipment, especially in the commercial field, and will make frequent contacts with the buyer after the equipment has been installed.

"I learned one principle early in the game that has been a great help to me since, and that is to personally oversee the installation of every piece of equipment that I sell. It creates a feeling of confidence in the user, and the salesman, if he knows anything at all about refrigeration, can keep a careless service man from mangling the job, and ruining future prospecting for the salesman in that particular neighborhood."

Do the friendships that Mr. Windel makes with the users become of any practical benefit? He estimates that perhaps better than 50 per cent of the sales come through tips offered by these friendly users.

Friendly User Important

Friendly users are more likely to cooperate with the dealer in the various plans which are formulated to obtain select prospects. In addition to the Copeland Users' Bond plan (whereby a bond with 10 coupons for names and addresses of prospects is sent to each user, who will, in return for submitting the names, receive $5 for each sale made from such names as he has submitted) the Coughenour Co. sends a check for $1 to each user at certain periods, which check is accompanied by a letter asking for the names of 10 prospects. Friendly users will keep the check and submit the names, Windel declares.

All the emphasis that the Coughenour organization places upon "using the user" doesn't mean at all that the cold canvass is neglected, Windel is quick to assert. Salesmen are required to make from 25 to 30 canvass calls each morning, and to make appointments for afternoon follow-ups and later for evening interviews.

Keeps Prospect File

A card index file of prospects in their various stages is carefully kept, and the salesman is given a certain number of cards each morning, on which he must report *before* the *following* morning.

"You can't beat the cold canvass for getting prospects, if it is *really* a canvass," Windel declares. "Too many times it is merely a half hour's work of doorbell ringing and 'reported as not being at home.'

"Too many salesmen rely too much on the doorbell. If the doorbell doesn't bring any response, I knock on the door, and if that fails, I always try the back door. The back door is a good place to get in, as you may find the woman at some work in the kitchen, and you can talk to her without taking her away from her household affairs."

Recognized as 'Closer'

Windel has gained recognition principally as a "closer." Like most good salesmen, he carries this out during night interviews, when he has both the husband and wife to talk to at the same time.

"I have found that the big selling point in these times is the savings in food that can be gained by the use of an electric refrigerator," he says. "One article that we will always have to purchase will be food, and any savings that can be made on food is a savings that will go on forever.

Testimonials Valuable

"Actual testimonials from friendly users are far better in this sales argument than any set of hypothetical figures. Here again comes the advantage of making friends out of users.

Champion

CARL WINDEL
National champion salesman of Copeland electric refrigerators.

"You can't neglect the mechanical features of the refrigerator in your selling, this being especially true when you run into competition. You can make prospects believe that you are doing them a great favor by educating them thoroughly on the matter of refrigeration—and at the same time nail down the good points for your own machine.

Likes Hard Sales

"Personally, I am very pleased when I encounter a prospect who states that he has decided to purchase another make of refrigerator. It assures me that he *is* a prospect, and he is most generally willing to listen to what I can tell him about *refrigeration*, and eventually what I have to say about the Copeland line.

"I try to sell the wife first, when I am selling a domestic model to a married couple. If I can get her to the point where she will bring pressure to bear upon her husband, I don't worry much about the sale. Even at times when I have failed to close the sale in what appears to be the final interview, I may be called back in two or three days to find that the wife's influence has got in its work."

Advertising Must Be Spectacular

The specialty selling game is one that demands the spectacular in advertising, Windel believes. Advertising of all kinds must be "interest getters" and should have direct appeal of one type or another, he states.

"Specialty merchandising offers opportunity for the new idea, for the 'different', like no other field I know," he says. "You've got to make your ideas fit the times, and at the same time be way ahead of the present. You are likely to have to use a great many new ideas with each new day.

Window Display Pulls Prospects

"One of our most successful 'stunts' was a window display in which we portrayed the Copeland refrigerator as the jewel of the kitchen, a plan used to make a special appeal to women. The refrigerator used in the display was finished in a way to give it a special glitter when put under spotlights. The number of women who came into the store to inquire whether they could get a refrigerator in their own kitchen that would look like the one in the window was astounding."

Sells Larger Models

Windel avoids the price part of sales talk as long as possible, he says. He will not sell the prospect a box which is too small for the family which it will serve, or which is not stylish enough to match the other furnishings in the home.

His steadfastness to this principle has resulted in more than *75 per cent* of his sales being in the *de luxe* line.

That is only one of the remarkable records he has hung up. He led the Coughenour forces in the field the day of the Christmas campaign when they closed 28 sales in 24 hours. He once sold nearly 20 *15-cu. ft. models* in a little over a week's time, and five of the installations were in homes in which but *two* people were being served by the refrigerator.

His Toughest Sale

It would be hard to pick out his hardest sale from the many which he has consummated. He has had many interesting ones and he tells of the characteristic way in which he sold a commercial job to a meat market proprietor in Washington Court House, a little town near Springfield, Ohio.

"I heard about this prospect on the very day that he was supposed to be signed by a competitor," Windel relates. "I hurried out to his place of business and discovered more distressing news in the fact that he was already a satisfied user of this other make.

"This didn't deter me, however, and I went ahead to make his acquaintance. I didn't talk refrigeration, I talked the meat business. I complimented him on the high quality of meats which he kept, and we got into a discussion on prices.

"Pretty soon I was calling him 'Glen' and when he went to work stenciling the top of lard pails, I was holding the stencils.

"It wasn't long before we were 'old friends' and I finally got down to talking about *refrigeration*, and then on the service that he would get from the Copeland machine. I left an hour and a half after I had entered the store with the sale in my pocket."

DAVIS ELECTRICAL CO. NAMED G. E. DEALER

WILKES-BARRE, Pa.—Davis Electrical Co. has become a display outlet for General Electric refrigerators here, according to N. C. Ovalle, Inc., distributor in this area.

Selling effort will commence immediately, but formal announcement of the fact that they are General Electric dealers will be made later when store rearrangement and redecoration have been completed.

1928 1929 1930 1931

Speaking of "sales curves"

...and everybody is...

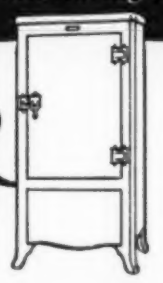
look at /

MAYFLOWER!

Sold thru retail merchants only
Period-styled cabinets
Pre-sold by national advertising
A complete refrigeration line
Refrigeration since 1920

HERE is a selling record that challenges the interest of every retail merchant who is considering the tremendous possibilities in electric refrigeration today. Twelve years of sound profitable Mayflower progress, *with an amazing increase in sales during the past four years*, is proof positive that the Mayflower product and retail merchandising plans are RIGHT. More than 80 per cent. of the market for electric refrigeration yet untouched. *Someone* in your territory will make money representing Mayflower electric refrigeration. That someone can be *you*. Get the facts. Trupar Manufacturing Company, Dayton, Ohio.

MAYFLOWER
ELECTRIC REFRIGERATION



Send us your name and address, and we will mail you our booklet outlining the complete Mayflower retail merchandising plan.

Westinghouse

Dual-automatic Refrigerator makes them

STOP · LOOK AND BUY!

THERE'S DOUBLE stopping-power in the magic phrase that is sweeping across the nation — WESTINGHOUSE *DUAL-AUTOMATIC* REFRIGERATORS. No wonder crowds press close to windows, while showrooms report unprecedented traffic figures! No wonder Westinghouse national advertising is showing the most amazing response in its history! The American public — trained to seek value — has quickly sensed the significance of this *exclusive* Westinghouse contribution to *carefree* refrigeration.

But that's just where the Westinghouse dealer's profit-story *begins!* For this remarkable development now puts a DOUBLE-EDGED sales weapon into any salesman's hands. It's not only a sensational "stopper," but a crashing "closer" as well. Coupled with other Westinghouse features of beauty, economy, convenience and mechanical perfection, it is already sending Westinghouse January sales figures well ahead of 1931.

A Real Profit Opportunity

Mr. Dealer, if you are interested in a short line and long discounts, and are satisfied to make your own way under the conditions such a policy implies, Westinghouse has nothing for you except the best of wishes. BUT if you realize that VOLUME, not discount, determines your profit . . . if you want a COMPLETE LINE — *something to sell to every prospect in your territory* . . . if you want merchandise that combines more *actual selling features* including the *exclusive* Dual-automatic principle, than *any* of your competitors can muster . . . if you want a *full measure* of the kind of advertising and sales promotion assistance that has put the electric refrigerator industry where it is today . . . Westinghouse has a real money-making proposition for you.

Get All the Facts at Once!

It will be well worth your while — regardless of your present connection — to hear the Westinghouse Dual-automatic story and learn how it can put a dual-drive into your 1932 sales. There's no obligation. Write, wire or telephone for full details.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
Refrigeration Department Mansfield, Ohio

Here are the new Westinghouse Water Coolers — the most beautiful line ever offered. Striking designs . . . black Micarta cabinets inlaid with aluminum strips . . . Chromium trim. Dual-automatic, of course.

Model CMB-4 is portable for bottle supply. Equipped with lock compartment for bottled beverages. Without compartment, Model MB-5.

Model MT-8 is for water supply line, with bubbler and self-closing faucet. With refrigerated compartment, Model CMT-4.

Westinghouse

MERCHANDISING SECTION
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The Business Newspaper of the Refrigeration Industry
Published Every Week by
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Also publishers of REFRIGERATED FOOD NEWS (monthly) and the REFRIGERATION DIRECTORY (annual)
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Radios and Refrigerators

ABOUT three years ago it became apparent that the radio industry was due for a tumble. From a tinker-toy for boys the radio had grown into a full-fledged musical instrument which brought "the world into your home," and which had given rise to a mighty industry. Sales mounted dizzily; profits were salted away.

More and more manufacturers entered the field. Majestic put console models on a line production basis, and cut a mighty swath through the industry. Came the slump, which Philco met by introducing the midget radio. Followed then an orgy of slashed prices, smaller and smaller sets, and rapidly decreasing margins of profit. For some time now it has apparently been extremely difficult for anybody in the industry to make money.

While the radio industry was tobogganing downward, the electric refrigeration industry had recovered from its own private slump (1926 and 1927) and was climbing steadily upward.

This fact was noted with considerable interest by the radio industry, particularly its dealers and distributors, who badly needed a popular new product for the home in order to restore their former profitable volume of business.

An Opportunity

Radio manufacturers also saw in electric refrigeration a chance to hold their distributing organizations, to market a relatively new product for which widespread public acceptance was being created, and to start idle factories humming once more.

Even more impressed were these manufacturers with the possibility of building up the valleys in their sales curves by adding electric refrigerators to radios. The latter sell best in winter, the former in summer. Combination of the two, they reasoned, should provide a good, steady business all through the year.

Majestic was the first radio manufacturer to bring out an electric refrigerator. After a long delay, which was enlivened by rumors of a hundred-dollar box, practically all of the vast chain of Majestic distributors and dealers were stocked with Majestic refrigerators.

In the meantime scores of radio distributors had taken territories for electric refrigerators. Copeland, Norge, and Servel between them garnered most of these franchise-seekers, and gained national distribution as a result.

New Units Appear

Last year the All-American Mohawk Co., which makes Lyric radios, began marketing an electric refrigerator. Other radio manufacturers, particularly Crosley, Philco, and Zenith, were said to be experimenting with refrigeration units. Not until the beginning of this year, however, did any of these new units materialize.

Sparks-Withington brought out its Sparton refrigerator a few days after the New Year had been ushered in, and F. A. D. Andrea followed with its line of Fada electric refrigerators. And now, after several false starts, comes Crosley with a box which retails for $99.50 f.o.b. Cincinnati.

Zenith, it is understood, has decided definitely to stay out of the refrigeration field. Philco remains silent on the subject. Atwater Kent and R.C.A. distributors, for the most part, are now handling various refrigeration lines. General Electric and Westinghouse, of course, have been making and selling both radios and refrigerators for some time, as has General Motors.

Since the electric refrigeration and radio industries began walking arm-in-arm, however, much of the early enthusiasm about the companionate qualities of these two products has been dissipated and dispelled.

When the join-hands movement first got under way, it was thought that General Electric, General Motors, and Westinghouse would begin to market their new radio sets through their well-established refrigeration sales organizations. Now, it is significant to note, the trend is toward ranges rather than radios as companion products for these leading makes of refrigerators.

Majestic Divides Responsibilities

Also significant is the fact that Majestic has completely separated its refrigeration and radio departments. Possessing one of the finest and most productive refrigerator factories in the industry, Messrs. Grigsby, Compton, et al, discovered that radio men couldn't begin to sell the output of electric refrigerators of which their plant was capable. So they have completely reorganized their home and field selling forces, putting experienced refrigeration men in charge of refrigeration sales, and allowing their radio men to concentrate on that field. In both New York City and Chicago separate distributors have been appointed for each of the Majestic products.

Parenthetically, it is interesting to note that both Crosley and Fada plan—at least for a time—to employ their present radio sales executives and organizations to distribute their new refrigerators. Just how long these arrangements will continue in force, officials of both concerns admit, is a matter of conjecture. Many Crosley distributors are planning to hire refrigeration sales experts to direct that part of their operations.

Serving Two Masters

It is now freely declared that, except for a few unusually versatile and adaptable individuals, the same salesmen cannot sell both refrigerators and radios and do justice to either.

Furthermore, it seems to be the general consensus of opinion that the same sales executives cannot adequately cope with the problems of merchandising both products. Only those distributors who have set up entirely separate departments to handle each seem to have profited much on the proposition.

In many cases, well-established radio distributors have done so well with refrigerators that they are now concentrating on the latter, and continue to handle radios merely as a sideline.

Special Technique

The substance of all this experience seems to be that the selling of electric refrigerators requires a special technique which radio men must learn if they expect to get far in the business.

Most distributing organizations have solved the problem by hiring men trained in the refrigeration industry to head the sales of that product. Those distributors who have set out to learn the game themselves have almost invariably forgotten that they were radio *mechants* and have become full-fledged *merchandisers* of electric refrigeration. In many quarters the lesson seems to have been learned that to sell electric refrigerators in the face of today's stiff competition requires concentration of efforts and singleness of purpose.

Radio and electric refrigeration will probably continue to conjoin. It is a case, however, of the younger and highly successful refrigeration industry giving aid and succor to the flat-on-its-back radio industry (by utilizing its facilities to gain more extensive distribution), rather than a continued recognition of the merits of the two as companion products.

Radio men who have entered the refrigeration industry have had to learn a new language, a new pace, and a new formula. And insofar as they have mastered and continue to keep up with this new technique, they have made money and will continue to profit.

Letters from Readers

"Z" Discloses Armour Testimonials

M. T. Zarotschenzeff, C. E.
136 Liberty St., R. 310
New York City, N. Y.
Jan. 12, 1932.

Editor:

In connection with a news item that appeared on page 2 (column 2) of the Jan. 6, 1932, issue, under the general heading QUICK-FROZEN FOODS, I believe the note which follows will be of interest.

The brine-fog or the "Z" process of quick-freezing is being introduced here and in Canada by its inventor, M. T. Zarotschenzeff, through his agent, the Engineering and Trading Corp., 136 Liberty St., New York City, as already mentioned on these pages in previous issues. In England, The Liverpool Refrigeration Co., Ltd., is his agent and cooperated with him in the technical development and commercialization of the process in the British Empire, with the exception of Canada. There are at present six general patents covering the process, some of which are already allowed, applied for in more than 20 countries.

The "Z" system is now in commercial use in France, Italy, England, and Norway, and other installations are projected for India (Bombay), Australia, and South Africa (the latter two for meats).

Mr. Zarotschenzeff arrived in this country in May, 1931, and brought with him several boxes of samples of foodstuffs frozen by his process, which have been examined and tested by Armour and Co. officials in Chicago. Their report, in substance, said:

"Samples of quick-frozen products were found to be excellent in every particular, including appearance, color and freedom from oxidation, and upon defrosting showed little drainage and were excellent for flavor and eating qualities when cooked."

Certain of the English samples, now almost 10 months old, were recently tried in New York City and were found to be of the same quality as fresh products. Some very delicate kinds of fish, sole and plaice fillets, were served at one of New York's leading hotels and were found by the president of the hotel and the chief steward to be delicious and equal to the fresh product in every respect.

During the meat packers convention samples of "Z" quick-frozen meats and fish were exhibited; as a result of which many requests were made by meat packers and others interested in the food industry for demonstrations of the process, covering all kinds of food products.

Hams were quick-frozen completely in three to four hours, and pork bellies were finished properly in less than two hours. Samples of quick-frozen meat offal, packed in cartons, were shown by one national packer to its salesmen for examination. They were pronounced good in every respect and entirely suitable for sale to the retail trade.

Officials of Armour and Co. have stated that in their opinion the brine-fog process is "effective and economical and (are) readily adoptable to present packing house refrigeration facilities and methods without the necessity of large capital outlay or special refrigerating machinery."

M. T. ZAROTSCHENZEFF.

Room Coolers Cure For Asthma

Cranston-Thomas Research Bureau
116½ E. Lafayette St.
Tampa, Fla.

Editor:

George F. Weidman, president of the Leiman-Weidman Box Co., the largest cigar box manufacturer in the United States, has for years suffered so much from asthma that it has been necessary for him to spend several months each year in the mountains, which meant traveling from Florida almost a thousand miles.

A few months ago, Mr. Weidman discovered that each time he went to the Tampa Theatre, he was relieved. This beautiful theatre is air conditioned and cooled with washed air, reducing the temperature 15° and the relative humidity 6°.

Seeking information, Mr. Weidman received several copies of the ELECTRIC REFRIGERATION NEWS from the Frigidaire company's local office, and read with interest the information on air conditioning and cooling, which resulted in having installed in his beautiful home, 2101 Bayshore Blvd., a Frigidaire room cooler.

The cabinet is installed in Mr. Weidman's bedroom, with the compressor installed in the garage at the back of the house, so that not the slightest sound penetrates the sleeping room.

A 1½-hp. compressor, air cooled, with a capacity for cooling and reducing humidity in 300 ft. room space, was installed, with a thermostat control, and a circulating fan, giving the room a reduction of 12° in temperature and 4° reduction of relative humidity. The cooler is a mahogany finished cabinet, and takes up very little room.

In Florida where the temperature averages 80° in summer and with exception of a few days in January and February seldom reaches 50° in winter, there is a great field for systems of air cooling for residences.

Mr. Weidman's air cooler has already paid for itself, as it has allowed him to stay in Tampa through the rush season, when the demand for cigar boxes for the Christmas trade makes it imperative for the chief executive to be on the job.

F. CRANSTON-THOMAS.

A Christmas Present In Europe

24, Rue Chateauneuf
Nice, A. M. France
Jan. 6, 1932.

Publisher:

I thank you very much for your kind letter of Dec. 24 and for your troubles in connection with my inquiry. I have not received any communication from the manufacturers as yet, but no doubt they will come now pretty soon.

The ELECTRIC REFRIGERATION NEWS has certainly developed into a very fine paper, and I assure you it was a great treat for me indeed to receive the whole bunch of numbers exactly Dec. 24.

Enclosed please find order for the extension of the subscription for another year.

It might be perhaps of interest for you to know that it was the local U. S. Consulate which helped me sometime ago to "rediscover" your paper, by lending me the thick January copy. Passing around this copy has produced, I believe, several subscriptions from Nice.

A. POPEREFF.

A Depression Cure

Electric Refrigeration Bureau
National Electric Light Association
420 Lexington Ave.
New York.
Jan. 8, 1932.

Editor:

The following quotation from the January issue of the monthly financial letter of the National City Bank may be of interest. The writer has been arguing that pessimistic prophecies regarding the duration of the depression, based on the idea that we are approaching saturation, are entirely fallacious. After pointing to similar prophecies in the past century which were definitely disproven by consequent progress, he states:

"Along with the old industries, new ones constantly appear and grow. No electrical engineer or chemist, familiar with the progress that science is making, will ever subscribe to the idea that there is less work to be done. In modern times wants are ascertained by investigation and inventions made to order to satisfy them. Industries now only on the threshold of development include aviation, refrigeration and air conditioning, television, and the electrical and chemical industries generally."

COLIN G. JAMESON,
Publicity Section.

Kind Words Dept.

We certainly appreciate the ELECTRIC REFRIGERATION NEWS and the work you are doing for the industry in general, and want to compliment you and wish you continued success—J. F. Seit, president, Modern Refrigeration Co., Belleville, Ill.

We believe ELECTRIC REFRIGERATION NEWS is a very great contribution to the industry and I congratulate you on your aggressive, outstanding publication—Judson C. Burns, Walnut at Twelfth, Philadelphia, Pa.

Enclosed find check to cover price of the DIRECTORY and I also wish to compliment you on General Motors' F-12 information that was furnished in the last issue of "My Newspaper!"—Refrigeration Service Repair, B. F. Wood, 1433 Walnut St., Des Moines, Iowa.

We enjoy your paper very much. Would like to see more about Independent Service Companies—P. K. Crawford, Saathoff-Crawford Electric Ref. Service, 534 Bailey Ave., San Antonio, Tex.

I read your paper weekly with a great deal of interest and I am sure I am not alone in considering it an authority on trade news in this district.—Harry Alter, president, The Harry Alter Co., 340 N. Dearborn St., Chicago, Ill., Majestic distributor.

OUR ERROR

The Ice-O-Meter Sales Co. (and not the Ice-O-Matic Sales Co., as was incorrectly reported in the Dec. 23 issue of ELECTRIC REFRIGERATION NEWS), of 2216 S. Michigan, Chicago, has recently been appointed a Copeland dealer.

N.E.M.A. RANGE GOAL FOR THREE YEARS SET

NEW YORK CITY—Characterization of the N. E. M. A. goal of a million electric range sales in the next three years as "the turning point in the N. E. M. A.'s history" was made by H. J. Mauger of the Edison Electric Appliance Co. The goal was adopted at the midwinter meeting of the N. E. M. A. last week.

Mr. Mauger stated that the objective is really more than merely to tap a $200,000,000 market. It is to raise the market another hundred million, resulting in a continuous annual volume of $100,000,000. The residence field, he said, offers the greatest opportunity of any today.

The association predicts that virtually every branch of the industry will reap added business from the program. The sale of every range for $117 means that switch and outlet producers get $7 or $8, and the meter manufacturer $7. Wiring costs are also a result. The transformer, generation, and transmission require expenditure.

The first step in the program is the education of the public to electric cooking. A fund of $3,670,000 will be needed initially for the program, and a total of $12,000,000 or more will be spent in the three-year period.

That the goal is not impossible is seen from the fact that certain sections of the country, in the Northwest, for example, are now as much as 30 per cent saturated on electric cooking. As a whole, the nation is saturated five per cent. The program outlined would merely bring this saturation up to 10 per cent.

Marshall Adams of Westinghouse outlined advantages of electric cookery at the meeting as follows: Its speed compares with any other type of cooking. The cost is only a penny per person per meal, at a 3 or 4-cent rate of current. That means about $4.55 a month.

Various other speakers, as T. K. Quinn of General Electric, Mr. Palmer of General Cable Corp., and Mr. Sawin of Westinghouse, spoke. President Trumbull presided.

G. E. DISTRIBUTOR STARTS YEAR-ROUND BONUS PLAN

CANTON, Ohio—The Willis Co., of Canton, Akron, and Youngstown, distributor of General Electric refrigerators in 16 counties, inaugurated an all-year-round bonus sales campaign subdivided into monthly campaigns, on Jan. 1. Hitherto the company has had special seasonal campaigns.

According to E. M. Diehl, advertising manager, "what is good selling promotion in spring and autumn ought to be good selling promotion all the year round, with sales peaks rising higher and higher every month."

Mr. Diehl calls the campaign the "Willis Cruise." Each office is a ship with a sales manager as captain and the salesmen for sailors. Each ship moves ahead so many miles for each sale, and bonuses are received each month by the ship having the highest percentage of quota, and the sailor of each ship having the highest percentage.

A final bonus will be given Dec. 31 to the winning "ship" and "sailor."

A ship's log or bulletin is published twice each month and sent to salesmen. A complete line of General Electric Hotpoint ranges was added by the Willis Co., Jan. 1, and the company plans to add a home service department in February.

TEN LEONARD DEALERS IN INDIANA SIGNED

INDIANAPOLIS—Ten new dealers in Leonard electric refrigerators are reported by the Capital Paper Co., Leonard distributor in the Indiana territory.

The new dealers are: General Furniture Co., Terre Haute; W. W. Mitchell & Sons, Crawfordsville; Coffing & Robinson, Attica; Gingrich Radio Sales, Lafayette; Rinehart Radio Sales, and Weiss Furniture Co., both of Richmond; Westermeier Hardware Co., Columbus; Maxwell & Persons, Linton; Floyd & Griffey, Brazil, and the Whitaker Furniture Co., Franklin.

WISWELL NAMED DISTRIBUTOR OF ELECTROCHEF RANGES

CHICAGO—The L. C. Wiswell Co. has been appointed distributor of the Electrochef electric range for northern Illinois and metropolitan Chicago, according to Gerald Hulett, sales promotion manager of Electromaster, Inc.

The company has been radio and Kelvinator distributor in that territory for a number of years.

EVERS JOINS SALES STAFF OF SERVEL, INC.

EVANSVILLE, Ind.—W. L. Evers has joined the sales staff of Servel Sales, Inc. For the past six years Mr. Evers has been connected in a sales capacity with two distributors operating in the Chicago area.

SPEED PRODUCTION with these NEW SIZES!

Armstrong's Type LK Corkboard now is made in boards up to 36" x 36"

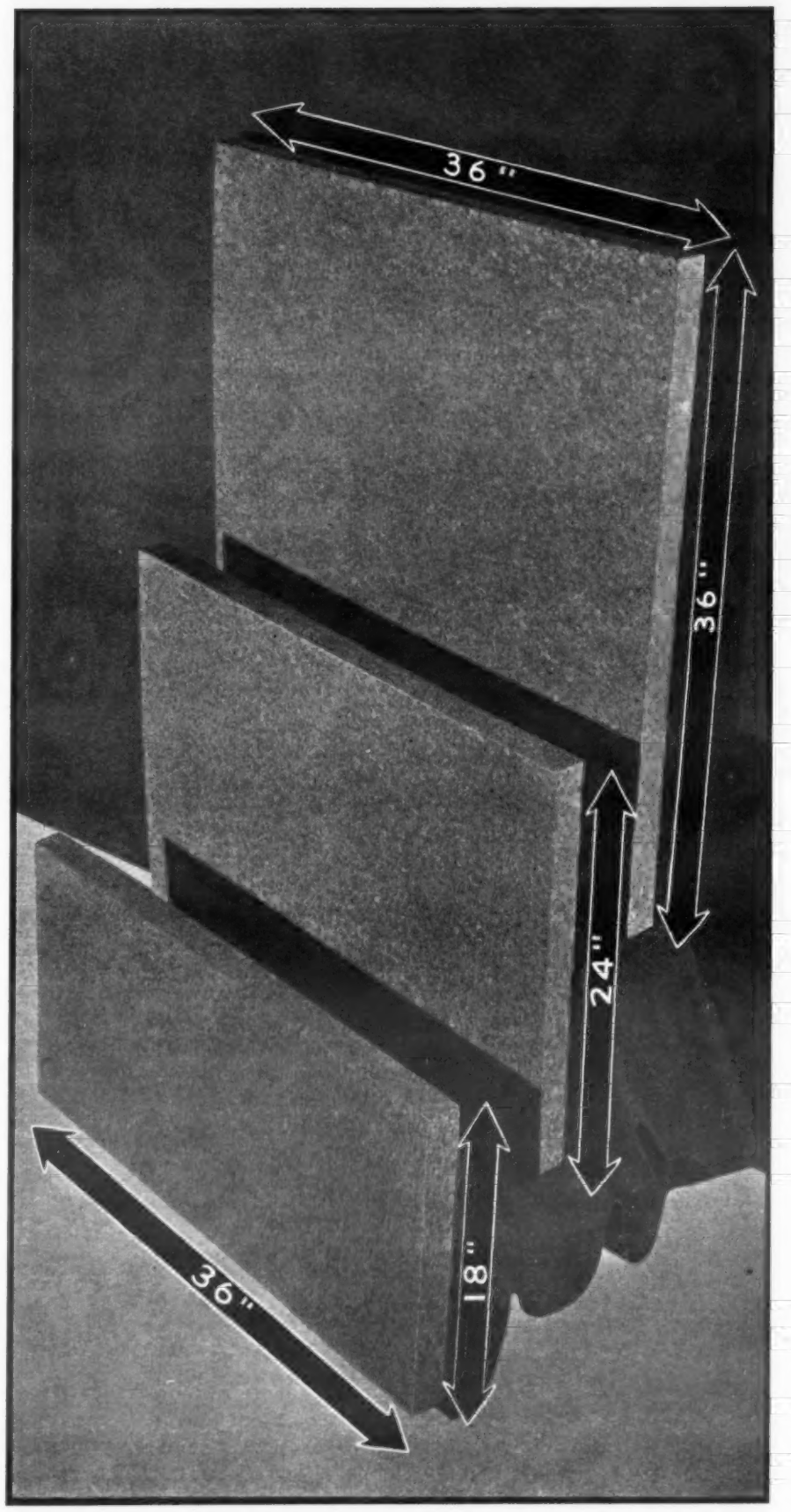
DO you want to save time, save labor costs? And at the same time give buyers of your equipment efficient insulation that will not deteriorate in actual service? Then insulate your refrigerators and display cases with the new, larger-sized sheets of Armstrong's Corkboard. This is the economical and satisfactory way to speed up production in your assembly line.

Efficient Type LK Corkboard, Armstrong's new type of corkboard made by an exclusive process, is now furnished in boards 36" x 36", 24" x 36", 18" x 36", as well as in the standard 12" x 36" board. If you prefer, you can buy it cut to size to fit your own specification.

This new type of corkboard has greater insulating efficiency than even standard corkboard. Its coefficient of thermal conductivity is only .263 B. t. u. per square foot, per inch thickness, per degree Fahrenheit temperature difference, per hour. Important, too, is Type LK Corkboard's lighter weight, resistance to moisture, and strength and rigidity.

Let Armstrong engineers tell you more about Armstrong's Type LK Corkboard—why it will enable your equipment to render more satisfactory service in actual use. There is an Armstrong branch office or representative near you. Or write to the Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster, Penna.

Armstrong's (A) Product



Memo

CHECK the nearest office. Get the phone number from the local directory. Then call for further information about the new sizes of Armstrong's Type LK Corkboard.

Albany, N. Y.; Atlanta, Ga.; Boston, Mass.; Buffalo, N. Y.; Charlotte, N. C.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Dallas, Tex.; Denver, Colo.; Detroit, Mich.; Grand Rapids, Mich.; Houston, Tex.; Jacksonville, Fla.; Kansas City, Mo.; Milwaukee, Wis.; Minneapolis, Minn.; New York, N. Y.; Omaha, Neb.; Pittsburgh, Pa.; Rochester, N. Y.; St. Louis, Mo.; Syracuse, N. Y.; and in Canada—Montreal, Toronto, Winnipeg.

Armstrong representatives are located in the following cities: Baltimore, Md., John R. Livezey; Los Angeles, Cal., Gay Engineering Corporation; New Orleans, La., H. T. Steffee; Philadelphia, Pa., John R. Livezey; Portland, Ore., Gillen-Cole Company; San Francisco, Cal., Van Fleet-Freear Company; Washington, D. C., John R. Livezey.

Armstrong's TYPE LK Corkboard Insulation

Efficient and Practical Insulation for Refrigerating Equipment

The 1932 Refrigeration Directory and Market Data Book

•

A handbook and buyer's guide—an encyclopedia of statistical information —for the use of distributors and dealers throughout the year

•

NO DISTRIBUTOR or dealer, sales or service department will be adequately equipped for buying and selling without the 1932 REFRIGERATION DIRECTORY always at hand.

Consisting of more than 400 pages, 6 by 9 inches, bound in cloth, the DIRECTORY will be loaded with just the kind of information that every distributor and dealer needs. By giving you the facts, figures and names *when you want them*, the DIRECTORY will save you time, save you money.

"Who makes this?"

"Where can I buy this special equipment?"

"What's the address of that supply house?"

Hundreds of specific questions the DIRECTORY will answer for you—quickly, easily. All manufacturers of refrigeration equipment, parts, supplies and materials are listed four ways: (1) Alphabetically, (2) by Trade Names, (3) by Classified Products, and (4) Geographically. Cross-indexing and printing of the various sections on paper of different colors will make the information easy to find.

Latest Statistical Data

In addition to listing complete buying information, the DIRECTORY will also give complete statistical data of the industry—the latest, authoritative facts and figures on sales; comparative figures on automobiles, radios, ranges, ironers, vacuum cleaners, dish and clothes washers; analysis of wired homes and saturation figures by states, counties and towns; growth curves and other important data.

Wholesale and Retail Selling

The statistical section will be of special interest to distributors and dealers, giving sales by months, analysis of refrigerator sales by prices; number of salesmen, per cent of retail price allowed dealers who (1) display only, (2) display and sell, (3) display, sell and install, and (4) display, sell, install and service. You will find this one section alone well worth the low price of the DIRECTORY.

Your Copy now at one-half price

The price of the DIRECTORY after publication will be $2.00 a copy. In order to get an accurate idea of just how many copies will be needed to take care of the industry's requirements, we are making a special pre-publication offer of copies at one-half price—just $1.00 a copy.

This attractive offer is good only for orders received during the month of January.

By acting promptly you can secure your copy for $1.00 and make sure of having complete information about your industry as soon as it is released.

Use the coupon today before this special offer expires.

..... 1932

Business News Publishing Co.,
550 Maccabees Bldg., Detroit, Mich.

Gentlemen:

Enclosed is $..... for ..... copies of the 1932 REFRIGERATION DIRECTORY at the special pre-publication price of $1.00 a copy.

Name .....

Address .....

City and State .....

Copeland's 1932 DeLuxe Model

Among the features of the new Copeland household line, brought out at the annual convention here, is the web basket demonstrated above.

Wisconsin Seeks To Oust Utility Heads

MADISON, Wis.—Invoking an act of the 1931 legislature relative to the responsibility of directors of public utilities, the Public Service Commission of Wisconsin has instituted action against officers of the Peoples Gas Co., calling on them to show cause why they should not be removed.

The stock of the Peoples Gas Co., the commission stated, is owned by the National Gas & Electric Corp., a subsidiary holding company of the American Commonwealth Power Corp., for which a receiver was recently appointed.

The commission said it has been unable to find any responsible person in charge of the Wisconsin operating company, declaring it "an intolerable situation to which we have no intention of submitting."

Notice was given to F. W. Seymour, of Battle Creek, Mich., and Albert Vermeer and F. T. Hulswit, 120 Broadway, New York City, of the proposed hearing.

The action resulted from the fact that for a number of months the commission has tried to bring a reduction in gas rates in Marshfield, because of what appears to be an excessive return. The commission was assured that a revised rate schedule would be filed, but no such action has been taken.

Since November, 1931, the statement continues, the commission has been trying to determine what persons are in charge of this corporation, in order to press the rate inquiry to some conclusion. "There are apparently," it says, "no local officers having to deal authoritatively with questions of management, and no resident directors."

RIORDAN APPOINTED MANAGER OF TEXAS BRANCH

SAN ANTONIO, Tex.—J. D. Riordan, general manager of the refrigeration division of the Neches Electric Co., has taken over the managership of the San Antonio branch of that company, distributor of Kelvinator in South Texas.

Mr. Riordan formerly was manager of the Beaumont, Tex. branch.

The Neches Electric Co. operates branches in Houston, Beaumont and San Antonio, in Texas and in Lake Charles, Louisiana.

LLOYD TO ARRANGE N.E.L.A. EXHIBIT AT FAIR

CHICAGO—E. W. Lloyd, vice president of the Commonwealth Edison Co., here, has been named chairman of the National Electric Light Association committee which will arrange for participation by that organization in the Chicago Century of Progress world's fair, in 1933.

CONNECTICUT INSTITUTION PURCHASES SIX G. E. UNITS

MIDDLETOWN, Conn.—The Middletown branch of Modern Home Utilities, Inc., General Electric distributor in Connecticut, has installed four S-140, one S-100, and one SS-82 units at Long Lane Farm, a state institution.

This makes 11 General Electric refrigerators operating in this institution, some of which have been operating more than two and a half years.

Sparton's New Product

The maid above is cold-dialing one of the new Sparton electric refrigerators produced by Sparks-Withington Co., Jackson, Mich., radio maker.

ELECTRIC RATES FOR ROME, N. Y. REDUCED

ALBANY, N. Y.—Reduced electric rates for the City of Rome and other territory served by the Northern New York Utilities, Inc., and reduced gas rates for the City of Niagara Falls have just been announced by the Public Service Commission.

The commission also announced that one of the first proposals for authority to charge for gas by therms instead of by cubic feet was to have been heard Jan. 25, when an application by the Syracuse Lighting Co. was to be considered.

Two Districts Formed

The proposed schedule divides the territory of the company into two districts, including the City of Syracuse and other parts of Onondaga County. In the first district, including the city, the proposed rate for general use would be a minimum bill of 50 cents per month, for which 2½ therms or less per month may be used. The next 20 therms would be 20 cents per therm, and all in excess would be 13 cents per therm.

Changes are also proposed for space-heating rates and wholesale service in both districts.

Changes in Gas Rates

The Niagara Falls Gas & Electric Co. was authorized to make effective on Feb. 1, a schedule providing a minimum charge of $1.35 per month, for which 400 cubic feet of gas may be used. The net rate for the next 600 cu. ft. is 15 cents per hundred, for the next 1,000 cu. ft., 10 cents per hundred, for the next 3,000 cu. ft., six cents.

Present optional rates for residential consumers and the present separate meter rates for commercial users will be eliminated by the Northern New York Utilities, Inc. The present higher rate for customers on line extensions also will be eliminated.

The approved rates are 9½ cents per kwh. for electricity in the first block and four cents per kwh. for use in the second block. The first block is 25 kwh. plus five kwh. for each 200 sq. ft. of area in excess of 600 sq. ft. The second block includes all use per month in excess of the kilowatt hours in block one.

RANDALL HANDLES PROMOTION WORK FOR DISTRIBUTOR

NEW HAVEN, Conn.—H. B. Randall, formerly of the sales department, has been named sales promotion manager of the Connecticut Electric Refrigerating Co., Westinghouse distributor for Connecticut.

He succeeds Norman K. Fuller, who has been elected vice president and is now devoting his time to field contact work.

BUTCHER SELLS TWO REFRIGERATION LINES

BUFFALO—A meat retailer by day and a salesman of both domestic and commercial refrigerators at night is Dorr Gordon, proprietor of Gordon's meat market, here.

Gordon, who finds inspiration in any kind of selling, has sold General Electric domestic models for more than a year, and Copeland commercial machines for about three months.

He sold 150 General Electric domestic models in his first year, and won a contest held by Erco, Inc., when he was in direct competition with full-time salesmen.

Takes on Commercial Line

He started to sell Copeland commercial machines a short time after he purchased one to refrigerate a display case in his meat market. The sale was one of the hardest ever put over by Carl Cairns, salesman for the Copeland Distribution Corp. of Buffalo, it is related, and he had to use a whole bag of tricks to convince this authority on both refrigeration and meats.

"The Copeland organization offered me bonuses for prospects I might give them among the trade who would buy a Copeland machine," Gordon relates. "It occurred to me that I might as well take full advantage of the proposition and do a little selling of the Copeland line on my own account.

Contacts Meat Trade

"My prospects are selected out of personal friends in the meat trade, and others whom I did not know previously, but who are now my friends. It is easy to make personal contact with them by talking about their store, the brands which they are carrying, and about the meat business in general.

"When I finally get around to talking about refrigeration, I make a low estimate on the amount of ice which they are using. They usually correct me in a hurry and tell me what their refrigeration cost actually is.

"'My gosh but that's high,' I say and proceed to tell them about the low operating cost of the Copeland unit in my store.

Closes Sales in Own Store

"I may then branch off into the service that electric refrigeration and modern, improved coils can give in the meat counter and storage box. I explain the effects of dehydration, and how modern refrigerating engineering has overcome it.

"Most of the sales are *closed* in *my* own store, where I bring the prospect to look over my electric power bills and to see for himself how efficiently the system is working."

Gordon's very enthusiasm for his work is probably as big a factor in his success as any one other thing. Refrigeration sales, especially in the commercial line, is more than a mere business enterprise with him, he considers the better protection of the meats and the savings he engenders for his fellow-members of the trade as a piece of true "missionary work."

He is not at all unhappy about the added income which he has gained from the sale of more than 150 General Electric domestic models, and the fact that the sales he has made on the Copeland commercial line have almost paid for the installation of his own new equipment.

EMBOSSED MEDALLION PUT ON ELECTROCHEF RANGES

DETROIT—A new embossed medallion, showing a woman's head in profile on a background of black, appears on the 1932 line of Electrochef ranges instead of a coat-of-arms trade-mark.

The head is done in satin silver finish and was designed to typify the modernity, courage, and progressiveness of American womanhood, according to Gerald Hulett, sales promotion manager.

Below the design are the words "Electrochef—for the Modern Woman."

G. E. DISTRIBUTOR TAKES ON HOTPOINT RANGES

LITTLE ROCK, Ark. — O'Bannon Brothers, General Electric refrigerator distributor for Arkansas and southeast Missouri, has accepted the distributorship of Hotpoint ranges for the same territory, according to S. P. O'Bannon, member of the firm.

Complete plans for handling the new product have not yet been made, Mr. O'Bannon says.

KELVINATOR-LOS ANGELES CO. GETS LARGER TERRITORY

LOS ANGELES—The Kelvinator-Los Angeles Co., 1424 W. Seventh St., local Kelvinator dealer, has been appointed Kelvinator distributor for southern California, and will henceforth operate under the firm name of the Kelvinator Pacific Co.

The appointment took effect Jan. 1.

10 Carloads, Please

N. B. Francis, treasurer of Frederick Raff Co., places an order with L. B. Lindsay, vice president of Trupar (left), for 10 carloads of Mayflowers.

Orders Carload of Units To Start Year

READING, Pa.—An order for a carload of Copeland electric refrigerators to start 1932 sales was placed by the B. O. R. Radio Co., Inc., of this city, on Dec. 21.

H. A. Olliviere, president of B. O. R., made a number of sales records last year, according to W. D. McElhinny, vice president of Copeland Products, Inc.

HARE MADE WESTINGHOUSE TRANSPORTATION CHIEF

NEW YORK CITY—J. K. B. Hare, until recently with the New York district office of the Westinghouse Elec. & Mfg. Co., has been appointed transportation manager in the central district, with headquarters in the Grant Building, Pittsburgh.

He will have charge of the company's transportation matters in Michigan, Ohio, Kentucky, western Pennsylvania and part of West Virginia.

Mr. Hare has been associated with Westinghouse since 1919.

GOVERNOR PROPOSES NEW UTILITIES TAX

TRENTON, N. J.—Because nearly all of the public utilities in New Jersey "are now engaged in interstate business of some kind or another," Gov. Morgan F. Larson in his message to the legislature Jan. 12, said that it may be necessary to abandon the gross receipts tax which has been in effect since 1900 and adopt another method of taxing the utilities.

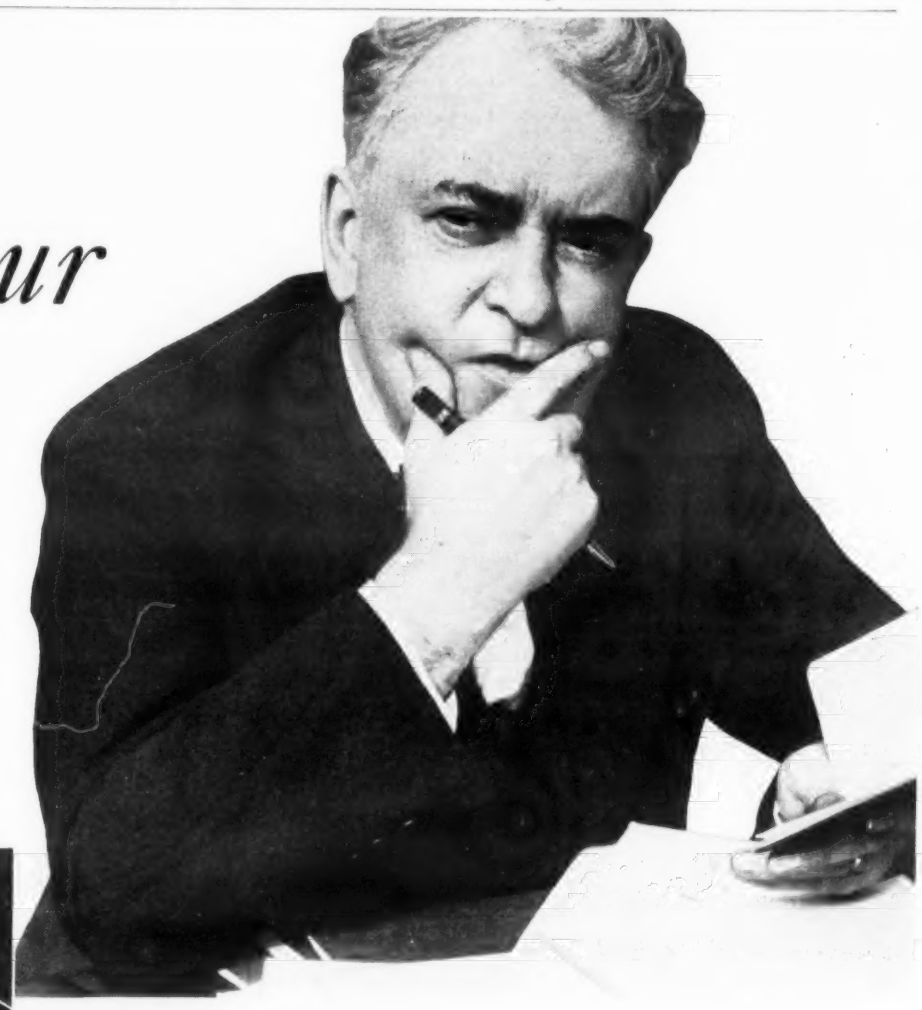
The governor referred to the decision of the Supreme Court of the United States in 1930, holding that the tax cannot be applied to receipts from interstate telephone business, and stated that if this principle is applied to all other utilities, the municipalities will be deprived of a large amount of revenue.

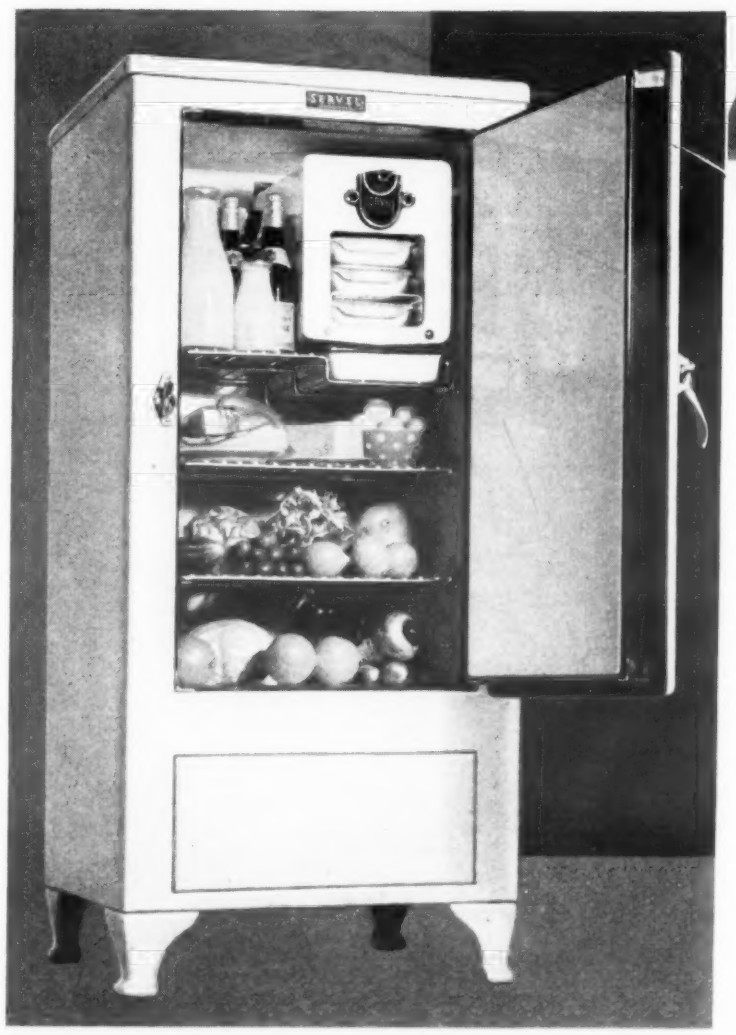
"No more important problem confronts you at this session of the legislature," he said.

"Certainly such companies should not be permitted to escape entirely the payment of franchise tax or taxes for the use of public streets or interstate business.

"The state is entitled to a fair proportion of such revenue for the support of its government."

"What are your PLANS for 1932?"





● *No kitchen repairs, intricate adjustments, or replacement of parts . . . no moving parts exposed and fewer of them . . . quiet, cleanly and economical . . . compact cabinets with maximum food storage capacity . . . no installation problem in any building.*

SERVEL is ready—thoroughly organized and ready, for the busiest selling season in the history of electric refrigeration.

The successful operation of retail sales work has been worked out to the smallest detail—a simple and highly efficient program that any dealer can put into effect tomorrow.

Servel Dealers have the most advanced electric refrigerator on the market today—the Servel Hermetic—with many refinements and improvements introduced after the most successful year in the company's history.

This highly simplified refrigerator is a "package job"—complete in one crate—simple to sell—simple to deliver—simple to install. It has a big, active market in your territory.

We not only give you sound plans to get a big share of the business—but we work with you constantly to make these plans produce!

Write—NOW—for full details of our attractive Dealer Plan for 1932.

SERVEL SALES, Inc.
Evansville, Indiana
Makers of a complete line of household and commercial refrigeration

SERVEL
HERMETIC
Simplified Refrigeration

ANALYSIS OF DATA RELEASED BY NEMA SHOWS NEW TRENDS

Six Foot Cabinet Is Most Popular Size

(Concluded from Page 1, Column 4)

Norge Corp., Servel, Inc., Tennessee Furniture Corp., Trupar Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co.

New Record on Household Sales

Not until comparisons are made with sales in previous years, does the remarkable performance of the Nema companies on the sale of household refrigerators during 1931 become evident. And the full measure of that performance can not be taken unless the business conditions of other years and especially of 1931 are kept in mind.

These comparisons can readily be made from sales figures for 1928, 1929, and 1930, which were also collected by the Refrigeration Division during the past year and which have just been released.

During 1928 the 10 companies sold 377,828 refrigerators at a factory valuation of $62,717,682. In 1929 the same group sold 704,497 refrigerators at factory prices worth $94,367,085. In 1930 the sales amounted to 707,050 refrigerators at $93,854,989.

The 1931 household figure of 800,813 represents, therefore, a gain of 93,763 over 1930. The gain of 1930 over 1929 was 2,553. The gain of 1929 over 1928 was 326,669, a remarkably high figure reflecting sales during the year before the depression began.

In valuation at factory prices the 1931 sales show a gain of $9,032,871 over the sales for 1930, a figure which stands out in striking fashion when compared with the loss of $512,096 in 1930 as against 1929.

In other words, despite the adverse business conditions of 1931, the 10 companies forged ahead in the sale of household refrigerators, establishing a splendid new record and demonstrating a merchandising ability unmatched by any other group in the electrical industry and perhaps in any other industry.

Commercial Sales Down

When it comes to the sale of commercial refrigerators last year by the 10 companies, it is a different story. Clearly it was an off-year for the commercial product. The actual number of sales reported by the group for 1931 is less than for 1928, 1929, and 1930.

In 1928 the commercial sales were 197,493 refrigerators. In 1929 they were 283,909. In 1930 they were 219,842. Thus, the 1931 figure for the 10 companies, 168,736, shows a loss of 51,106, as against 1930.

This, however, is a smaller loss than that of 1930, as against 1929, when the loss stood at 63,967. The year 1929 still stands as the peak year in commercial sales.

In valuation at factory prices the commercial sales for 1931 amount to $24,671,716, which is less than the sales for any one of the three previous years. In 1928 commercial sales for the group amounted to $33,771,037. In 1929 they were $35,808,142. In 1930 they were $30,490,031.

Detailed figures for the household refrigerator sales are as follows:

Household Refrigerator Sales—1931

By the 10 companies that are members of the Refrigeration Division, National Electrical Manufacturers Association.

TOTAL SALES 800,813

This figure is the total of the cabinets sold complete with systems (one system to each cabinet), the total of separate systems, and the total separate low sides. It exceeds the total of these three figures shown in detail below because it includes figures from manufacturers who sent in totals which were not broken down into the items listed.

Detailed figures on 701,388 refrigerators out of the total of 800,813 break down as follows:

Cabinets with Systems (one system to each cabinet) 194,903

Net Food Space

Under 4.00 cu. ft.	2,940
4 to 4.99 cu. ft.	78,219
5 to 6.99 cu. ft.	86,697
7 to 8.99 cu. ft.	23,335
9 to 11.99 cu. ft.	2,886
12 to 18.00 cu. ft.	826
Total	194,903

Separate Systems 176,572

Separate Low Sides 329,913

Total 701,388

Total Cabinets Sold 765,730

The above figure is the total of the 194,903 cabinets sold with systems added to the figure for the cabinets only, without high or low sides, amounting to 570,827. The 570,827 cabinets only were divided into sizes as follows:

Net Food Space

Under 4.00 cu. ft.	24,231
4 to 4.99 cu. ft.	108,761
5 to 6.99 cu. ft.	298,611
7 to 8.99 cu. ft.	42,543
9 to 11.99 cu. ft.	15,946
12 to 18.00 cu. ft.	9,234
Total	570,827

Separate High Sides (¼-hp. and less) 319,181

This figure represents the total number of high sides (condensing units) billed separately. It is not used in arriving at the total number of household cabinets refrigerated, because one high side might handle two or more cabinets, and some of the household low sides will be connected with still larger high sides that are shown in the figures on commercial equipment.

Parts and Miscellaneous $743,301

Some manufacturers did not report household parts separately from commercial and in such cases the household parts were included in the listing under commercial parts.

Total Valuation Household Refrigerators $102,887,771

The valuation shown here is at factory prices.

Household sales in quantity by months and quarters for 1931 were reported by the Nema companies, as follows:

January	18,917	
February	45,503	
March	80,320	
First Quarter		144,740
April	132,414	
May	127,671	
June	101,492	
Second Quarter		361,577
July	86,419	
August	58,021	
September	44,262	
Third Quarter		188,702
October	39,999	
November	32,879	
December	32,916	
Fourth Quarter		105,794
Total for the Year		800,813

Itemized figures on the various food capacities for refrigerators sold complete with systems, show the lead maintained in sales by the refrigerators of 5 to 6.00 cu. ft. net food space. Sales were reported for 1928 to the number of 18,369; in 1929 the number was 15,928; in 1930 it was 58,798; and in 1931 it was 86,697.

In each of these years the number sold for this capacity outstripped all other sizes. In 1931, however, the number of refrigerators sold with a net food space of 4 to 4.99 cu. ft. was 78,219, indicating the progress made during the past year by the smaller-sized refrigerator.

In the case of cabinets only, sold without high or low sides, the figures show a shift in 1929 from the 4 to 4.99-cu. ft. size to the 5 to 6.99-cu. ft. size. In 1928 the sales figure ran 133,947 for the 4 to 4.99-cu. ft. size, as against 110,924 for the 5 to 6.99-cu. ft size.

However, in 1929 the sale of the smaller capacity was 157,038, as against 312,506 for the 5 to 6.99-cu. ft. size. In 1930 the larger size held the lead with 269,075, and also in 1931 with 298,611.

In the sale of cabinets only, without high or low sides, for the food space of 12 to 18 cu. ft., the figures show a steady decrease for the last two years. In 1928 the figure was 12,384; in 1929 it was 14,893; in 1930, 9,486; and in 1931, 9,234. Again the "boom" year is evident in 1929 as well as the effects of the depression in the figures for 1930 and 1931.

Commercial Figures Itemized

Commercial refrigerator sales for 1931 by the 10 companies are itemized as follows:

TOTAL SALES 168,736

Water Coolers (with high sides) 20,671

Water Coolers (without high sides) 404

Total 21,075

Ice Cream Cabinets (with high sides) 20,660

Ice Cream Cabinets (without high sides) 16,973

Total 37,633

Milk Coolers (without high sides) 9

This figure is very small probably because most of the milk coolers are made by manufacturers outside of Nema and purchased by dealers or distributors to go with high sides made by the Nema companies.

Room Coolers (without high sides) 285

This is a new item which has not as yet grown to a business of very large size.

Counters and Commercial Boxes. 1,479

This item is relatively small probably because most of the counters and commercial boxes are sold to distributors and dealers by manufacturers outside of Nema.

Extra Low Sides, Commercial. 109,734

These low sides are not included in the figures for ice cream cabinets, water coolers, etc.

Extra High Sides (1/3-hp. and up) 84,338

Parts and Miscellaneous $507,848

This figure includes household parts where reporting manufacturers failed to separate them from commercial parts.

Total Commercial Items 168,736

Total Valuation Commercial Refrigerators $24,671,716

This valuation is at factory prices.

Detailed monthly averages in dollars, quantities, and percentages of loss or gain are shown for the four years in the tabulation on this page. They show that on the combined household and commercial business for 1931 the 10 companies made a gain of 2.7 per cent in the dollar value of sales, at factory prices, and of 4.6 per cent gain in the quantity sold.

A gain of 10.9 per cent is recorded in the value of the household sales and a gain of 13.3 per cent in the number of household refrigerators sold, for 1931.

A loss of 19 per cent is shown in the value of the commercial refrigerators sold, and a loss of 22.8 per cent in the total number of commercial low sides sold, for 1931.

Household cabinets show a gain of 23.8 per cent.

Extra commercial low sides show a loss of 22.5 per cent.

Extra commercial high sides show a gain of 23 per cent.

Ice cream cabinets show a loss of 19.7 per cent.

Water coolers show a loss of 34 per cent.

All of the foregoing percentages, of course, are shown as against 1930. The tabulation also gives the percentage of gain or loss for the year 1930 as against 1929, and for 1929 as against 1928. It is noteworthy that in 1929 sales every item shown carried a substantial gain over the same item for 1928, with the exception of extra commercial high sides.

In 1930, every item shown carried a loss, with the exception of the number of household refrigerators and water coolers. It should also be noted that whereas in 1930 the number of household refrigerators sold exceeded the number sold in 1929, the value was less than in 1929. In 1931, six items show a gain, and five a loss.

Four Years Sales Records for the 10 N.E.M.A. Companies

FIGURES BELOW ARE DOLLARS, AT FACTORY PRICES

	1928	1929	1930	1931
Household and commercial	$96,488,719	$130,175,226	$124,345,010	$127,559,487
Monthly average	8,040,726	10,847,935	10,362,084	10,621,967
Compared with previous year		+35%	−4.5%	+2.7%
Household	62,717,682	94,367,085	93,854,989	102,887,771
Monthly average	5,226,473	7,863,924	7,821,249	8,573,981
Compared with previous year		+50.8%	−0.5%	+10.9%
Commercial	33,771,037	35,808,142	30,490,021	24,671,716
Monthly average	2,814,253	2,984,012	2,540,835	2,055,976
Compared with previous year		+6%	−15%	−19%

FIGURES BELOW ARE QUANTITIES

All low sides	574,935	988,306	926,892	969,549
Monthly average	47,911	82,359	77,241	80,796
Compared with previous year		+72%	−6.3%	+4.6%
Household low sides	377,826	704,497	707,050	800,813
Monthly average	31,485	58,708	58,921	66,734
Compared with previous year		+86%	+0.4%	+13.3%
Household cabinets	370,826	638,147	618,007	765,730
Monthly average	30,902	53,179	51,501	63,805
Compared with previous year		+72%	−3%	+23.8%
Total commercial low sides.	197,493	283,809	219,342	168,736
Monthly average	16,458	23,651	18,278	14,061
Compared with previous year		+43.6%	−22.7%	−22.8%
Extra commercial low sides	137,584	204,937	140,516	109,734
Monthly average	11,465	17,078	11,709	9,145
Compared with previous year		+49%	−31.4%	−22.5%
Extra commercial high sides	127,079	124,567	68,651	84,338
Monthly average	10,589	10,380	5,721	7,026
Compared with previous year		−2%	−44.8%	+23%
All ice cream cabinets	46,586	50,466	46,833	37,633
Monthly average	3,882	4,206	3,902	3,136
Compared with previous year		+8.3%	−7%	−19.7%
All water coolers	13,192	28,181	32,314	21,075
Monthly average	1,099	2,348	2,692	1,756
Compared with previous year		+113%	+14.6%	−34.9%

ESTIMATES OF LAST YEAR ARE COMPARED WITH NEW FIGURES

(Concluded from Page 1, Column 5)

total industry sales by years since 1921 were published for the first time. The estimate of sales of household electric refrigeration systems was as follows:

Household Sales Estimates Made By News Last Year

1910 to	Household Systems
1920	10,000
1921	4,000
1922	11,000
1923	17,000
1924	29,000
1925	65,000
1926	190,000
1927	350,000
1928	495,000
1929	730,000
1930	770,000
Total	2,671,000

In the above figures the *number of compressors* was taken as the basis for estimating the total number of electric refrigerating systems sold. The figures include complete self-contained units and compressors for remote and multiple installations.

It was estimated that the total *number of families* using electric refrigeration at the end of 1930 was approximately 3,000,000. The excess of this figure over the total number of systems sold was accounted for by multiple installations where one compressor unit serves a number of refrigerator cabinets in apartment buildings.

At the end of 1930 the total number of wired homes in the United States numbered 20,438,774, making the saturation of the household market 14.7 per cent.

Consideration was given to the question of replacements of obsolete equipment, but since 95 per cent of the total sales had been made during the five-year period from 1926 to 1930, inclusive, the replacement business was not believed to be a sufficient factor to affect the estimates.

New Basis of Figuring Total Sales

In analyzing the data furnished by the NEMA group, published in this issue, it should be noted that the totals show the *number of families* served by electric refrigeration, rather than the number of compressors. For example, the total number for 1931 is 800,813. This consists of complete systems with cabinets, separate systems without cabinets and separate low sides (cooling units). In order to make the figures comparable with those published in ELECTRIC REFRIGERATION NEWS last January it is necessary to subtract the number of separate low sides and add the number of separate high sides (compressors).

For 1928 the NEMA total is 377,826. Subtracting 214,536 separate low sides and adding 212,332 separate high sides gives 375,622 high sides or compressors. Using the same process the figures for the four years are as follows:

Year	Compressors
1928	375,622
1929	636,737
1930	676,482
1931	790,081

Subtracting these totals from the estimate published in ELECTRIC REFRIGERATION NEWS we have the following quantities representing sales of household compressors by all other manufacturers:

Year	News Estimate	Nema Group	All Others
1928	495,000	375,622	89,378
1929	730,000	636,737	93,263
1930	770,000	676,482	93,518

It will be noted that the estimate of sales for other companies is nearly constant for the three years.

There is evidence that the 1931 sales of other companies (not members of the NEMA group) will exceed those of the previous three years by 25,000 to 35,000. The final estimate will be published later and complete tabulations for all classes of refrigeration equipment will be given with charts in the 1932 REFRIGERATION DIRECTORY and MARKET DATA BOOK to be issued in February. (Price $2.00 per copy.)

1929 Estimate by News Is Confirmed

Prior to the publication of authoritative estimates in ELECTRIC REFRIGERATION NEWS last year, other figures had been widely quoted and were even accepted by the United States Department of Commerce. The figures were not greatly at variance with those issued by the NEWS except for the year 1929. For this year the NEWS estimate of 730,000 household systems amounted to 100,000 more than the number quoted in other publications.

It will be noted that the NEMA group alone made sales of 636,737 systems and that the NEWS estimate allowed only 93,263 for all other companies, which is approximately the same as for other years. It is quite possible that the NEWS estimate was really low for 1929, since this was the boom year during which the largest percentage of gain was made by practically all companies.

Referring to commercial equipment, if the NEMA experience is representative of the entire industry, then the NEWS estimates of commercial sales will need considerable revision. It was with many misgivings that the estimates were published as is indicated by the footnote on page 2 of the January 14, 1931, issue as follows:

"All figures, *particularly average retail value and total sales of commercial units*, subject to revision in a later issue."

The estimate for the complete commercial refrigeration systems, based upon compressors sold, was as follows:

Commercial Figures Issued Last Year Need Revision

	Commercial Systems
1923	500
1924	8,500
1925	44,000
1926	60,000
1927	118,000
1928	140,000
1929	172,000
1930	232,000
Total	784,000

The NEMA figures for 1928 are:

Water Coolers Complete	13,192
Ice Cream Cabinets Complete	12,129
Extra Compressors	127,079
Total	152,400

For 1929 the NEMA figures are:

Water Coolers Complete	28,181
Ice Cream Cabinets Complete	22,777
Extra Compressors	124,567
Total	175,525

For 1930 the NEMA figures are:

Water Coolers Complete	32,314
Ice Cream Cabinets Complete	22,949
Extra Compressors	68,651
Total	123,914

The NEWS figures are, therefore, too low for 1928 and 1929 and too high for 1930.

For 1931 the NEMA figures are:

Water Coolers Complete	20,671
Ice Cream Cabinets Complete	20,660
Extra Compressors	84,338
Total	125,669

It will be understood, of course, that it is very difficult, indeed, to estimate the total number of commercial applications, or the separate cabinets refrigerated by the extra compressors (or high sides). Also, a large number of commercial cabinets are refrigerated by ammonia machines made by companies not included in the NEMA group. Figures are being furnished by the association representing the manufacturers of commercial and industrial refrigerating machinery, but since the average tonnage of these units is fairly high, the figures do not add much to our knowledge of the number of separate commercial applications.

Furthermore, there is no parallel between the method of estimating the number of families using electric refrigeration (based upon the number of household systems) and the number of commercial establishments using electric refrigeration, since the latter cannot be estimated either from the number of compressors (or high sides) sold or the number of evaporators (or low sides) sold. A commercial establishment may have one or more compressors. There may be several refrigerator cabinets, coolers or display cases attached to one compressor and there may be one or more evaporators (or low sides) in one refrigerator.

Further study of the figures furnished by the NEMA group, also data obtained from the Refrigerating Machinery Association and the Commercial Refrigerator Manufacturers, must be made before it will be possible to revise the figures and curves for commercial refrigeration.

LITTLE STORIES OF INTERESTING PEOPLE IN THE REFRIGERATION INDUSTRY

THE EXPANSION VALVE

LITTLE STORIES OF INTERESTING IDEAS IN THE REFRIGERATION INDUSTRY

By George F. Taubeneck

Sales Strategy

Don Compton, the very human vice president and general manager of the Grigsby-Grunow Co., admits that two small boys recently sold him on the proposition of parting with a sizable wad of cash for a purchase which really was not justified.

The two small boys—not so small, either, for they are in their early teens—are his sons.

A few nights ago Mr. Compton came home from a long evening session with figures and balance sheets. He was tired. You can guess that he wasn't in particularly receptive mood for a sales presentation.

He opened the door to his home, doffed hat and coat, and headed directly for his room, which is at the far end of a long hall. As he turned into the hall his eyes were confronted with three pieces of paper. On each was written the word: "Please."

At each step down the hall to his room was placed another sheet of paper. The first one read: "Only $187.50." Next was "Free Wheeling," followed by "Syncro-mesh transmission," and "70 miles per hour."

Right straight up to the door these sheets of paper led, each one naming some feature of the new Chevrolet motor car. The one on the doorstep repeated the initial statement: "Only $187.50."

Long before he reached the door, however, Mr. Compton had caught the idea. His two sons owned a 1931 Chevrolet. Apparently they had been down to the Chevrolet showrooms to see the 1932 models, and were all sold on the new machines.

The $187.50 represented the cash which would be needed, in addition to their 1931 model, to get one of the new jobs.

Inside his room Mr. Compton found pinned to his pillow a summary of the points which had been listed on the paper trail, with a closing sales argument.

And finally, the boys had rifled his mail, found dividend checks equivalent to $200, and pinned those to the pillow.

P. S. They got the car.

Mr. Compton declares that their 1931 model was perfectly good, and that they had no need whatsoever for a new car. But he believes in encouraging enterprising salesmanship, even when it costs him money.

* * *

Don Compton

One both likes and has confidence in Don Compton at first sight. He is a fatherly appearing individual in ripe middle-age, ruddy, raw-boned, with lines about his eyes which bespeak a ready sense of humor.

He talks straight and acts straight, and seems to have the straight goods on the situations he discusses. Unlike many manufacturing executives, he seems to understand some of the ways and the uses of publicity and advertising.

Psychology, to him, is not just a conjuring name, but is a set of workable facts and principles—buttons to touch in order to get desired responses.

He is actively directing operations of the rejuvenated Grigsby-Grunow Co., reporting directly to B. J. Grigsby himself.

That word "rejuvenation" seems to be particularly applicable to the Majestic organization just now—particularly the refrigeration division of the business.

No longer are radio men in charge of refrigeration activities. Men nursed and nurtured in the refrigeration industry are now laying plans for the spring drive. And they have an esprit de corps which has a fraternal ring to it.

* * *

Ditzell, McComb

Prominent among the new tribe of sales executives now running the Majestic refrigeration department are John Ditzell, refrigeration sales manager, and H. G. McComb, refrigeration sales promotion manager.

Mr. Ditzell is young, clean-cut, definite, aggressive, and sparkling. Majestic distributors who gather in Chicago this week-end to hear refrigeration sales plans for 1932 will find a hustler on the directing end of the program.

A development engineer and a field sales representative for various refrigeration manufacturers before coming to the Grigsby-Grunow Co., Mr. McComb is a man of ideas—and original ideas, at that.

Voluble, imaginative, he will talk your arm off if you give him half a chance. And you'll like it too, for the things he says are as interesting as they are novel. His mind moves much faster than his physical bulk would indicate.

Working at a desk between Messrs. Ditzell and McComb is none other than V. E. Vining, long known to the industry through his activities with Copeland and Servel.

Here's a secret. Don't tell any Majestic distributors, for they aren't to know about it until their gathering at Chicago this week-end.

When they are comfortably seated in the first meeting, according to Mr. McComb, "Sam" Vining is going to appear on the stage waving a heavily bandaged finger.

"See that, you fellows?" Vining will shout. "I got that bum finger ringing doorbells last week!"

* * *

Neil Bauer

Naturally the industry isn't hailing with glee the announcement that Crosley is going to market a small electric refrigerator at an f.o.b. price of $99.50.

But those members of the industry who saw the Crosley box at the Chicago Radio and Electrical Show last week and met some of the Crosley men were all impressed with Neil Bauer.

This young gentleman—we don't know how old he is, but he doesn't seem a day over 30—is sales manager of the Crosley Radio Corp., and will direct sales of Crosley refrigerators.

He is tall, confident but modest, direct and straightforward, honest, frank, and open.

Even though the industry may not like the Crosley price, the addition of men like Neil Bauer to the remarkable assemblage of sales minds who have helped electric refrigeration attain so commendable a record, must be welcomed.

If the cheap Crosley box is a forerunner of a price war, then its introduction is to be deplored. But after spending some time with Mr. Bauer, one cannot help but feel that he will not tolerate cutthroat tactics or cheap-john competitive methods.

And that, ladies and gentlemen, is something.

* * *

Majestic Frigidaire

The power of that name, Frigidaire, seems to know no bounds.

At the Chicago Radio and Electrical Show last week we stepped up to the Majestic booth. A uniformed attendant handed us a copy of the Majestic *Voice of the Air*, a radio promotional publication. We accepted it with thanks.

"And now," asked this Majestic representative, "would you like some literature on our Frigidaires?"

* * *

Big News

From the standpoint of one who attends almost as many dinners and banquets and conclaves as New York City's Jimmy Walker, the Copeland convention banquet Monday night in Detroit's Book Cadillac hotel was big news. Reason:

There wasn't a single speech.

It was the first time in the memory of the oldest living inhabitant of the Book Cadillac that any special dinner had ever been held there ungarnished with oratory.

Nor could the Valve's much shorter memory recall a similar experience.

The fact that 1,100 Copeland distributors, dealers, and salesmen gathered in Detroit for the convention was news, also.

It was by far the biggest turnout in Copeland's history.

It was the biggest convention the refrigeration industry has seen in many moons.

And it was said to be the biggest sales convention—save one—ever held in Detroit. That solitary exception was the memorable occasion when R. H. Grant pulled in 2,200 Chevrolet men to Detroit for a council of war.

* * *

R. H. Grant

Mention of Grant, the comet-like sales leader who pushed Delco-Light to a virtual monopoly of its field, who helped Chevrolet sell enough cars to pass Ford for the first time in history, and who is now vice president in charge of sales for the General Motors Corp., reminds us of an anecdote Mr. McElhinny told about him at the Copeland convention.

When Mr. Grant left Delco-Light to become Chevrolet's chief executive, Mr. McElhinny asked him what moves he planned to make after assuming his new responsibilities.

"Lots of things we can do," Mr. Grant opined, "but one thing needs doing first."

"What's that?" asked Copeland's sales leader.

"Close up the gaps," returned Mr. Grant. "Too many cities and districts in these United States don't have the opportunity to buy Chevrolets."

So effectively did Mr. Grant succeed in closing up the gaps that some three years later Chevrolet sales were greater than Ford sales—and still are.

Closing up the gaps, Mr. McElhinny avers, will be Copeland's most important task in 1932.

* * *

Mac's Epigrams

At one point on the Monday morning program of the Copeland convention, Mr. McElhinny was drawing booms of applause after every sentence.

Largely it was the magnetism of Mac himself that was arousing the hullabaloo. Several of his sentences, however, are applaudable even in cold print, without benefit of voice or gesture or mob spirit. We quote:

"Economists are now telling you that you were wrong when you made it, wrong when you lost it, and wrong if you try to make it again.

"The depression has hurt people's imagination—paralyzed it, numbed it. When imagination begins to flow again, watch what happens.

"People won't buy things they already have unless the new models are so much better that it is greatly to their advantage to scrap what they have."

Mac foresees a gigantic future for room cooling and commercial refrigeration.

* * *

Shoes

Once upon a time it was our ambition to become a dramatic critic. After we found out how dramatic critics were paid, that ambition was somehow forgotten.

Even so, every once-in-a-while we wake up to the fact that we *could* be a dramatic critic if we wanted, in our spare time (never had a lesson in his life; they laughed when he sat down at the typewriter).

How come? Simply because no refrigeration sales convention seems complete these days without an injection of honest-to-gosh drama. Real plays, with professional actors or players whose talents indicate they could have had their names in electric letters had they so chosen, are produced at almost every important industry assembly.

Take McElhinny's play, "Shoes," for instance. Mac wrote, produced, and directed this play for the Copeland delegates at Detroit last week.

This play had movement, well defined and easily recognizable characters, sustained interest, humor, and more than a dash of that old-fashioned ingredient known as "drammer."

It also had a pantomimic prologue, epilogue, and interlogue (there's a new word to try on your home-town dramatic critic).

This "logue" was allegorical, symbolical, and diabolical. It never varied, was repeated after each scene of the play, and consisted simply of this:

A quartette of men (who were dubbed the Four Footmen) came out to the center of the stage, looked carefully at their shoes, and walked off.

The theme, of course, was that the incessant use of shoe leather is Step No. 1 toward success as a refrigeration salesman.

Among the lines of this play which drew the heartiest guffaws and most prolonged cheering were these, both uttered by the dealer-who-wore-a-swivel-chair:

"Since I quit paying my salesmen, they don't seem to stick around long enough to learn the business.

"There aren't enough people who come here to buy. I want a line which will sell itself."

* * *

William Robert Wilson

Visibly impressed were the 1,100 Copeland men who heard their board chairman, William Robert Wilson, discuss the current business and financial situation on the first morning of their recent national convention.

Mr. Wilson looks his part. He is well set-up, gray about the temples, immaculately dressed, prepossessing. The even tenor of his voice could be heard clearly in the farthermost recesses of the big Masonic Temple auditorium.

Copeland's highest executive has been president of one of the country's leading banks, and is now president of the Reo Motor Co. Being both a banker and an automobile man, he can appreciate the record made by a refrigeration organization in times like these.

A keen student of finance, Mr. Wilson was able to lay bare a number of underlying currents which are affecting today's movement of business. His analysis of the situation proved highly enlightening to many of his hearers, judging by their remarks at luncheon that day.

* * *

Among Those Present

Conspicuous among those who attended the Copeland convention were:

Benjamin Binder, forward-looking distributor from Newark, N. J. Young, dark, flashing, confident, he brought with him a large and loyal troupe of co-workers.

Frank Williams, eastern territorial representative. Although he is one of the oldest members (in length of service) of the Copeland organization, Frank spent little time in reunions. At almost any hour he could be seen at his desk in the hall, talking turkey to one of his distributors.

E. A. Terhune and Bill Lyons from Boston. This pair, buddies, missed little in Detroit worth seeing, took care of a whopping big delegation, soaked up plenty of sales ammunition, and returned to Beantown rarin' to go.

Ralph Douglass, Copeland's energetic advertising and sales promotion manager. Douglass toted his new assistant, O. Eastman, around with him, introduced him to all and sundry, and proudly told the story of Eastman's copywriting marathon, which began many weeks ago and didn't end until the eve of the convention.

B. I. Cooper, distributor from Syracuse, N. Y., is a sober, gray-haired man whose judgment of human nature seems exceptionally keen. Much of his time was spent in looking after the men he brought with him, keeping them happy and seeing that they got the most possible benefit out of the convention.

President Louis Ruthenburg was his usual affable, substantial self, and kept up his high oratorical batting average by delivering a clearly thought-out and well-phrased speech to the assembled guests. Between acts he talked with scores of the visitors, and impressed them all as being a good fellow as well as a capable executive.

Vice presidents Ed Hughes and Ed Brown had themselves a great time. They had no orders to take, no cautious buyers from which to wrest signatures, no heavy duties to perform on the stage. So they smoked peaceful pipes with old friends, cemented alliances with new ones, and made themselves generally agreeable to as many visitors as they could possibly contact.

Glenn Muffly, consulting engineer for Copeland and code expert for the refrigeration division of the N. E. M. A., also enjoyed the proceedings from the grandstand. He received congratulations from many old friends on his new office as president of the A. S. R. E., which he will assume this week in Cleveland.

Glad Henderson, all-around utility man from *Radio and Talking Machine Journal*, was an easy target in a heavily striped bright brown suit, a glowering blue shirt, and a delirium-tremens tie of lively pink interrupted by generous polka dots.

Glad says the Valve reminds him of a certain astrologer who holds forth along Atlantic City's noted Boardwalk. Thanks, pal, and what filly are you picking in the fifth at Agua Caliente today?

* * *

Meet the Successor to Dr. Lucifer Butts

The following contribution was addressed to the "Expansion Valve" by a member of the Elin Co. (Westinghouse distributor at Newark, N. J.). Wishing to remain semi-anonymous, the contributor prefers to be named "Eddie H." His offering is printed verbatim herewith:

This is a revolutionary idea. In fact I have seen wars started over less.

The idea is merely this. Outside temperatures are sometimes so low as to cause a dangerous condition where refrigerators are kept on back porches. Freezing temperatures spoil food so I have perfected a device which eliminates this dangerous condition by never allowing the temperature in the food chamber to fall below 35° F. Simply install one of our especially designed refrigerator heating units in the food compartment. This unit automatically turns on at 35° and can be used for a number of purposes such as frying eggs, perking coffee, etc. Simple isn't it? In fact foolish.

The last one of these I had was an *automaticauto*. This was a car designed with rear wheels a great deal larger than the ones in front. You can very readily see that this would eliminate the necessity of a motor as it would be constantly on the down grade. To make the steeper grades you merely back up. This was never put on the market, but would have been a rousing success if it worked.

On Gibson's Dotted Line

Frank S. Gibson, Jr., vice president in charge of sales of the Gibson Electric Refrigerator Corp., signs the agreement making Joseph M. Zamoiski & Co. a distributor for the Gibson line. Seated (left to right): Cal Zamoiski, Frank S. Gibson, Jr., John Lewis, vice president and general manager of the Gibson company, and Herbert E. Young, Gibson's eastern representative. Standing: F. A. Delano, Gibson's general sales manager, and Fred Kuff of the Zamoiski organization. The new Gibson distributor will operate in Baltimore and Washington, D. C.

RUTHENBURG LISTS MEASURING STICKS TO BE

COPELAND EXECUTIVE TALKS TO RADIO MEN

By Louis Ruthenburg*
President, Copeland Products, Inc.

According to the best estimates now available, radio merchants accounted for the sale of approximately 20 per cent of the electric refrigerators sold in the United States during 1931.

It is apparent, therefore, that this group includes a great many experienced and notably successful refrigerator merchants. I naturally assume that those among you who do not fall within this category have given careful thought to refrigerator merchandising and, in all likelihood, have reached pretty definite conclusions about it.

Specialty Selling Methods

Because of these impressions, it will be my purpose this morning to discuss certain methods of measurement that seem to be useful as means for reaching conclusions about any type of merchandise that lends itself to merchandising methods usually described as "specialty selling."

It must be apparent to all of you that when you take on a specialty line, the article to be sold is of secondary importance. What you really are buying is not an attractive line of radio receivers, refrigerators, or what-have-you, so much as an opportunity to establish and maintain a permanent and profitable specialty merchandising business. The gadgets you buy and hope to sell must be regarded simply as the tools for accomplishing your major objective—the means to an end. This point of view is very important.

As I describe these methods of measurement which I think are applicable to all lines of specialty merchandise, I shall illustrate their use by applying them to the refrigeration industry with which I happen to be familiar. If you find the measuring sticks which I am about to describe interesting, you can use them for measuring the probable value of any merchandise in which you may be interested. By this method of attack I hope to avoid the odium of comparison.

*Address before sixth annual convention of National Federation of Radio Association in Chicago.

Industrial Growth Measurements

The first measuring sticks which I am about to recommend have to do with the present position of the industry in its natural course of growth or evolution. Such measurements impress me as being vital and fundamental.

There is no such thing as a "still" photograph in industry. It is a dynamic motion picture. If we fall asleep during any given episode of the industrial motion picture, we awake to find ourselves confused and out of touch with the theme. We must conceive any industry in which we happen to be interested as a moving, growing thing which follows a very definite law of growth.

Three Phases in Growth

There are three principal phases in the growth of a given industry: the initial period of slow growth; the secondary period of rapid growth, and the third phase in which the rate of growth again declines.

The first phase of growth is characterized by experimentation and missionary work. During this first phase of relatively slow growth, the buying public is not generally conscious of the need for the product. High sales resistance is encountered. Because the technical problems having to do with design and production have not been mastered, and because field service practices have not been crystallized, this first phase is characterized by relatively high service costs.

This first phase of industrial growth is always interesting to those who are imbued with the spirit of the missionary and the pioneer, but it is not the most profitable period for selling organizations and usually is attended by high mortality among distributors and dealers and rapid turnover among salesmen.

Second Phase Sudden

The second phase of industrial growth frequently is introduced with startling suddenness. Some times the public appears to become conscious of a product almost overnight, and the second phase of the growth history is an extremely rapid one as compared with the initial phase. Subject to all sorts of external influences, this second phase of rapid growth has a tendency to continue at an accelerated rate until the market is initially satisfied—and this initial satisfaction of the market leads directly into the third phase of growth which is a slower period, influenced by replacement sales, population growth and similar factors.

This characteristic growth curve might be described as two floors connected by a step-ladder.

Get in Rising Period

We are justified in believing that it is not always advisable to "get in on the ground floor." Rather the place to set our feet is up on the lower rungs of the rising ladder. It has been the history of distribution that maximum profits are made and maximum growth is attained by distributors and dealers who enter an industry during the early days of the rapid growth period.

If you want to apply this method of measurement to an industry that has passed through the first and second growth phases and into the third phase, examine the curve which shows the annual volume of the automobile industry over a period of 30 years.

You will observe an extremely slow rate of growth from 1900 through 1908. You will note a greatly accelerated rate of growth from 1908 to 1923. Discounting the tremendous peak of 1929, you will observe a steady decline in the rate of growth from 1923 through 1931.

Now examine a corresponding growth history of the refrigeration industry. You will observe the characteristic slow initial growth extending from 1921 to about 1925. You will see the rate of growth greatly accelerated from 1925 through 1931. You will conclude that the third phase of growth—the slowing-up period—will not be entered by the refrigeration industry for some time to come because only 16 per cent or 17 per cent of the wired homes in the United States have been equipped with electric refrigerators, and only about 12 per cent of the families in the United States enjoy this modern blessing.

It is an interesting fact that industries which are in the initial stages of the second phase of rapid growth tend to show great resiliency in the face of general business depression.

The refrigeration industry, as you know, has shown very substantial growth in volume and profits during both 1930 and 1931—years in which almost all other industries have shown marked declines. The automobile industry, for example, which is admittedly in the third phase of slow growth, shows a decline of 57 per cent for passenger car production in 1931 as compared with 1929; whereas in terms of units manufactured, the household refrigeration industry shows a growth of 44 per cent in 1931 as compared with 1929.

Before discussing the next industrial measuring stick, I want to emphasize the fact that no one of these measurements, considered alone, is particularly important. There are many industries which suffer set-backs during what would normally be their rapid growth period on account of any number of conditions other than those brought about by the fundamental growth law. Please apply as many measurements as you can to the industry in which you are interested, and reach your conclusions as the result of sound perspective developed by proper valuation of all measurements.

Measurement of Seasonal Characteristics

Next, I should like to discuss a set of measurements which have to do with the seasonal characteristics of a business.

If every business in the United States could, every year, do 12 times the volume and show 12 times the profit displayed in the one best month throughout the year, we should have a tremendous increase in business volume and profit.

The relationship between the sales volume actually realized during any one year and that represented by 12 times the maximum month's business, might be described as the "load factor" of a given business. We are accustomed to thinking in terms of "load factor" as applied to central stations, but it is a mighty important consideration as applied to your own business and mine. Just to impress this thought on your minds, I wish that each one of you would multiply your best month's profit in 1931 by 12 and relate that figure to the actual net profit realized at the end of 1931.

Of course, a 100 per cent "load factor" or a straight line seasonal curve represents an ideal condition impossible of attainment. But any improvement that can be made in the seasonal curve of your business and mine is vitally important, and for this reason a careful measurement of the seasonal characteristics of the industry in which you happen to be interested is most important.

Any one who seriously considers the sale of a new line of merchandise will do well to examine critically the characteristic seasonal fluctuations of the sale of that commodity. The magnitude of the fluctuation should be carefully estimated. The number of months during which high volume of sales can be expected is important.

The degree to which the business declines during the dull months needs examination, and particularly important is the relationship of the seasonal curve of the new business to the business in which you are now engaged. A merchant will not find it particularly constructive to supplement his present line with a line of merchandise, the seasonal curve of which peaks during the same period of the year in which he enjoys maximum sales with his present merchandise.

Seasonal Fluctuations

It happens that refrigeration sales in most sections of the United States reach their peak during the months of April, May, and June. Naturally the curve may shift 30 days either way, depending on the section of the country in which refrigerators are being sold. This characteristic seasonal curve tends to balance seasonal characteristics of commodities which sell in greatest quantities during the Fall and Winter months.

Another important set of calculations related to the seasonal curve has to do with probable changes in the seasonal characteristics of the given business. Very broadly speaking, the seasonal sales curve has a tendency to follow the usage curve. If I were selling snowshoes, I should only expect to sell them in quantity when there was snow on the ground.

Similarly, I should not expect to sell a great many straw hats during the winter time. Before the days of low-priced closed cars and good roads and self-starters, very few automobiles were sold during the winter months. As closed cars were introduced at low prices, as roads were improved, and as the self-starter became an accomplished fact, the seasonal characteristic in the automobile sales curve changed decidedly.

It happens that electric refrigerators, once installed, are almost invariably used 365 days in the year and 366 days in leap years. As the public becomes educated to this fact, one may reasonably expect an improvement in the seasonal characteristics of the refrigerator sales curve. It happens that just now people are "ice-minded."

We all think more or less in terms of putting the ice card in the window during the first warm days of the summer and of discontinuing the use of ice as soon as the weather becomes cold. We believe that God gives us winter refrigeration but we must buy it in the summer time.

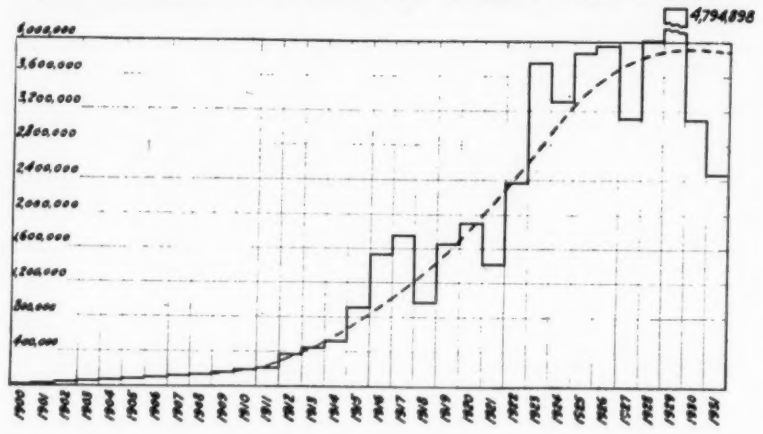
Such hang-over habits influence prospects for household refrigerators, but because refrigerators are used consistently every day in the year, it is reasonable to expect gradual improvement in the seasonal curve.

Measure of Permanency in Specialty Field

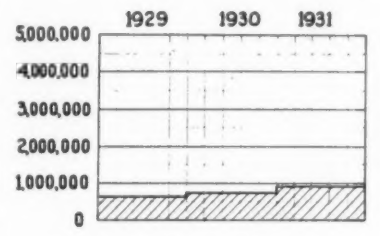
You will find it interesting to measure the industry in which you are interested in respect to its probable permanence in the field of specialty selling. We all know that specialty selling methods are expensive. We also know that vast quantities of merchandise are sold by less expensive methods.

It is an obvious fact that if a commodity at any time lends itself to merchandising by less expensive methods, it will not represent a particularly profitable line to those interested in specialty selling. There are some com-

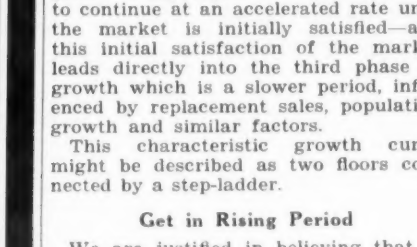
(Concluded on Page 17, Column 1)



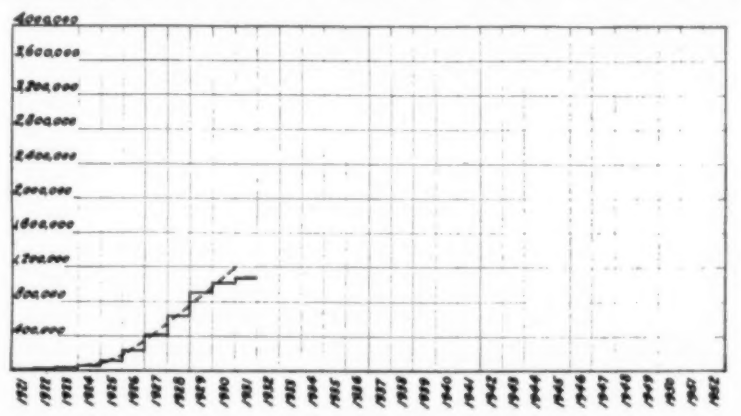
The rise of automobile sales and the decline is shown in this chart portraying yearly sales.



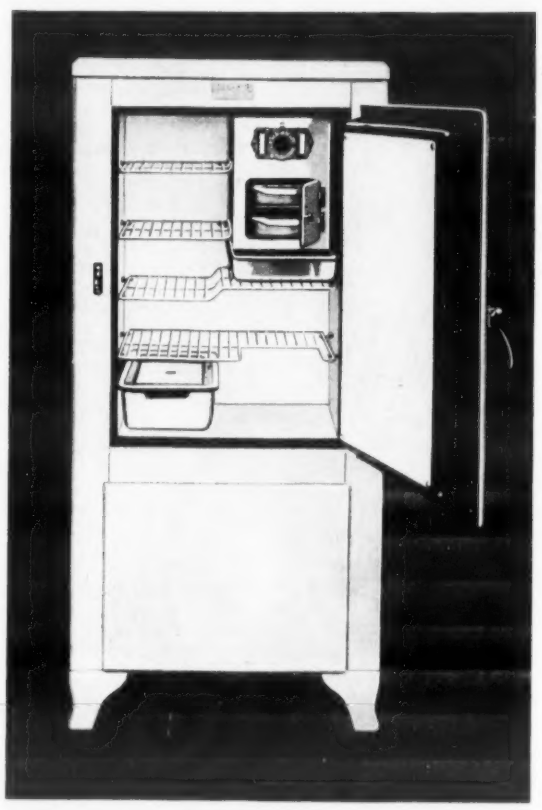
Household refrigeration sales



Showing decline in auto industry



The similarity of refrigeration and automotive charts can be readily seen.



No. I-452

ANNOUNCING

THE NEW 1932

Universal Coolers

CONSISTENT with a policy that has resulted in ten consecutive years of healthy growth, Universal offers for 1932 a new and finer series of self-contained domestic refrigerators that possess every modern feature and convenience—are traditionally economical and dependable—and offer unquestionably superior values at exceptionally moderate prices. Like its predecessors, this line is certain to win many new friends and increased profits for Universal Dealers.

Complete details upon request

Universal Cooler Corp.

Detroit, Mich. - - Windsor, Ont.

CONSIDERED IN SPECIALTY MERCHANDISING

COPELAND EXECUTIVE TALKS TO RADIO MEN

(Concluded from Page 16, Column 5)

modities which, in the nature of things, must always remain in the field of specialty selling.

I cannot imagine the successful sale by a department store or mail order house of a cash register, an adding machine, an automobile or a life insurance policy. Why not? For the simple reason that two elements are involved in the sale of these commodities that cannot be applied by the low cost selling agency. One of these is intensity of selling effort. The other, and in the last analysis the more important, is specialized service.

Please do not misunderstand me. When I say "specialized service," I am not referring solely to mechanical service—the repair and adjustment of apparatus in use. That is only a small, if vitally important, fraction of the business of specialized service.

I mean more particularly the type of service that is rendered by a highly trained and intelligent salesman who, by virtue of his knowledge of the product and of its field of usefulness, and as the result of his skilled approach and demonstration, so impresses the prospect with his honesty, knowledge and will to serve, that he becomes the trusted adviser of the prospect. You have met this type of salesman in the field of life insurance. You have found him selling cash registers and office appliances. We must develop and train them in all fields of specialty selling.

Specialty Selling Important

There is every indication at the moment that opportunities for profitably applying intensive selling effort and specialized service will always exist in the field of electric refrigeration. In planning the future of his business, probably nothing is more important to the man interested in specialty selling than the development of activities in which he can continue to capitalize these two things: intensive selling and specialized service.

To date, relatively few electric household refrigerators have been sold through other than specialty selling channels. In 1931, the department stores probably sold less than 6 per cent of the output, despite the "hypodermic" of low-priced, special-brand merchandise and coin-meter plans. The sale of electric refrigerators by mail order stores is even less impressive. Indications point to the permanent need for sound specialty selling methods in the merchandising of electric household refrigerators.

Need for Further Development

Entirely apart from the present field of household refrigeration, the refrigeration industry has many ramifications in which the specialty selling organization always can continue to capitalize intensive selling and specialized service.

A little more education refrigeration-wise on the part of architects and the home building public, and we shall not satisfy the builder of a fine home costing $10,000 or more with a single household refrigerator. The residence of the future will require the installation of a central refrigerating plant cooling a food box on one side of the kitchen, a low-temperature case for making ice, storing meats and frozen foods for indefinite periods in another part of the kitchen.

Operated by this same central plant, there will be a complete refrigerator in each guest room, and many householders will not be unmindful of the advantage of operating refrigerated coils in connection with certain apparatus in the recreation room. This unit will not be the little unit which now characterizes the household refrigerator, but in many cases will be a unit large enough to supply adequate room cooling in addition to the other demands which I have described.

Technical Developments Completed

Such developments as these are facts accomplished as far as technical development is concerned. It remains only for those of us who are interested in sales promotion and public education to make such installations an accomplished fact and a profitable selling business in every part of the country. Such installations will never be sold by mail order houses and department stores. They offer a permanent opportunity of applying intensive selling and specialized service.

The forward-looking merchant who appreciates the importance of perpetuating intensive selling methods and specialized service will find the tremendous field of commercial refrigeration open to him. Operators of food stores are rapidly coming to realize that they cannot afford to overlook an investment which will bring about the handsome returns in reduced operating expense, increased customer appeal and enlarged net profits that are brought about by modern refrigeration.

It is apparent that the wastage of perishable foods in the United States in retail channels only amounts annually to the enormous total of approximately half a billion dollars. A tremendous portion of this wastage will be saved by modern refrigeration. In commercial refrigeration we have a business in which purchases can be financed out of current waste.

Apparently we are just in the beginning of a new era of food distribution which is being introduced by the quick-freezing processes. Until recently one of my reasons for looking forward to a visit to the Gulf coast was a marvelous fish called the pompano. Now I receive quick-frozen pompano in Michigan, and even though I may keep it for several days after it is received, I defy anyone to distinguish between the quick-frozen fish and a pompano freshly caught in the Gulf of Mexico.

Quick-Frozen Foods Field

Every retailer in the country, who undertakes the sale of quick-frozen food must purchase adequate low-temperature equipment for storing and displaying it. The equipment is of a new order as compared with mechanical refrigeration quite suitable for preserving unfrozen food. Un-frozen food is preserved at temperatures ranging from just below to just above 40° F. Quick-frozen foods must be preserved at temperatures not greatly above 0° F.

Long before written history began, our dwellings were heated during the cold months of the year. With all of the advances that civilization has made, how many dwellings do we cool satisfactorily during the warm months of the year? The vast field of room cooling and air conditioning offers a challenge and a remarkable opportunity to men engaged in the business of selling refrigeration.

So much for the measuring sticks which have to do with the growth position of the industry, its seasonal characteristics and its probable permanency in the specialty selling field.

Measurement of Sponsorship

Another set of measurements which will be applied by the forward-looking merchant to any industry in which he happens to be interested will have to do with the sponsorship under which the industry is carrying forward. Are the principal manufacturers known to be conservative and sound? It is not sufficient to ask this question only of the manufacturer with whom you intend to do business, but of all the principal manufacturers in the field.

Your own manufacturer must shape his policy according to those of his competitors, and no matter how sound and conservative he may be within his own organization, he cannot operate soundly and conservatively if he be surrounded by competitors who are not so minded.

In this connection, it is interesting to examine the trade association activities of the industry in which you happen to be interested. Many industries have fallen into serious difficulties—difficulties which have affected distributor and dealer no less than the manufacturers themselves—because of lack of coordination among the various manufacturers and resultant bad trade practices.

Results Satisfactory

Measurement of the refrigeration industry in respect to sponsorship, the level-headedness of the leading manufacturers and constructive trade association relationships will produce satisfactory results.

While you are engaged in these measurements which have to do with sponsorship, please do not overlook the importance of investigating the attitude of the public utilities toward the industry in which you are interested.

It will be admitted by any clear-sighted merchants in the electrical field that the public utilities, considered nationally, have been one of the most important factors in the promotion of sales of electrical devices. They might be described as being selfishly constructive. Their business is to sell electric current at a profit.

As far as the household load is concerned, the growth of their business was for years almost parallel to the growth in the number of wired homes in the country. Of recent years the rate of growth of wired homes has declined sharply, but the public utilities have managed to continue the growth of their household load by adding to the current demand in homes already wired.

Public Utility Sponsorship

And so that device which tends to produce for a given amount of promotional effort the greatest increase in current sale will be sponsored most enthusiastically by the public utilities. If it happens that that device not only brings about a great increase in current consumption in proportion to sales promotional effort expended, but carries with it desirable load characteristics, both daily and annual, does not require special feeders nor meters, nor demands for other special service on the part of the public utility, their sales promotional efforts and expenditures will be tremendously accelerated.

Examine all of the electrical devices in the American market today and find one that approaches the electric refrigerator in respect to the requirements above set forth, and you will earn the everlasting gratitude of the public utilities.

I am informed by the manager of the Refrigeration Bureau of the National Electric Light Association that during the year 1931, the public utilities of the United States engaged in advertising and sales promotional activities devoted to electric refrigeration involving the expenditure of well over a million dollars. This type of sponsorship represents an asset that no specialty selling organization can afford to dismiss lightly.

Measuring the Manufacturer

Having made measurements of the industry as a whole, it is likely that your final measurements will have to do with the particular manufacturer with whom you expect to do business.

An important measurement will have to do with the history of his past performance as a manufacturer in the particular industry in which you are interested.

Manufacturers must serve their apprenticeships in each industry in which they engage. You can safely assume that any manufacturer will require about three years of trial and error before his policies in any given industry can be satisfactorily crystallized.

Having made this measurement, it will be interesting to ascertain if his distribution experience has included your particular type of specialty selling organization. Specifically, has he been successful in assisting radio outlets to establish and maintain themselves in the profitable distribution of his product?

Next, are the manufacturer's products sufficiently diversified and comprehensive to meet your present and probable future needs? Are his policies such as to insure permanency of his products in the specialty selling field? Perhaps you do not want to be a "one crop" organization, subject to vicissitudes like those which beset the "one crop" farmer.

Refrigeration No 'Set-up'

So much for measuring sticks. Please keep them in mind. Those I have described have to do with the growth position, seasonal characteristics, permanency in the specialty selling field, sponsorship and the manufacturer. If you will learn to use these measuring sticks, you can profitably apply them to any industry in which you may be interested. Apply them as carefully as you like to the refrigeration industry and you can safely be guided by your conclusions.

But no one whose experience in specialty selling is conditioned entirely by the sale of radio should look upon the sale of refrigeration as an easy "set-up." I have indicated that the field of specialty selling must be characterized by intensity of sales effort and by specialized service. Both of these factors must be developed to the highest possible degree by the specialty selling organization that would successfully merchandise refrigeration.

Thrift, Health Arguments

American pocket books open much more readily to appeals based upon pleasure and entertainment than to sales arguments which have to do with thrift and the preservation of health.

Our selling lessons must be learned, not from the passenger car salesman nor the fashionable dress shop, but from the fellow who is successful in selling such things as life insurance, cash registers and office equipment. We must sell the things the refrigerator can accomplish for the prospect, rather than the thing itself.

Our salesmen must know how to capitalize the instinct to "keep up with the Joneses"—the present fashion of being thrifty, the deep-lying instinct to preserve food, the welfare and health of little children, great convenience and the elimination of drudgery, added leisure and joy of living, the added touch of hospitality, permanent satisfaction and enduring quality.

Best Radio Outlets Only

Refrigeration dealers must receive from their distributors untiring assistance of the most constructive nature.

Unless their methods of thinking and of doing business are completely revised, a great many radio dealers have no place in the merchandising of refrigeration.

It is our impression in brief, after an experience with radio outlets extending over a period of years, that refrigeration offers the opportunity of a permanent and profitable business only to the highest and most constructive types of radio outlets, and to these true representatives of the art of specialty selling, it is capable of bringing great rewards.

FRIGIDAIRE SALES CORP. WINS DAMAGE SUIT

ATLANTA — The Frigidaire Sales Corp. has been declared victor in a federal court jury verdict denying B. F. Prickett $50,000 damages for injuries alleged to have been received when he was overcome by gas which, he charged, the company released on a lot near Cleveland Ave. in 1929.

McCORD Condensers Give Better Performance Because of Their PERMABOND CONTACT

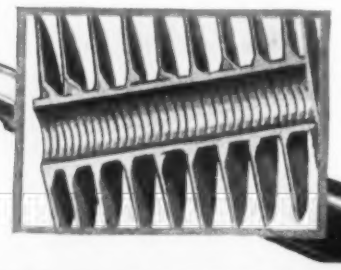
McCORD Condensers occupy less space, create greater air turbulence and give better performance, because of the McCord PERMABOND contact between the fins and tubes. Greater lineal foot contact is permitted by making a permanently tight footed contact at the base of the spiral fins, assuring maximum surface in contact with the tube.

Fin and tube contact is so tight that by looking through the tube the convolutions of the spiral fin can be plainly seen. This slightly rifles the inside of the tube, causing a small amount of baffle which creates a turbulence of the refrigerant and assists materially in lowering its temperature.

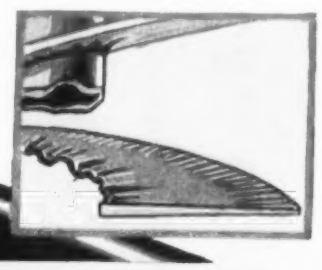
McCord tapered spiral fins are flat, but slightly thicker at the inner diameter than at the outer edge. This wedge-shaped cross-section permits the greatest amount of heat absorption where the fin touches the tube and the greatest amount of heat dissipation at the edges.

These features account for the superior performance of McCord Condensers in both domestic and commercial installations. McCord makes condensers to the individual specifications and blue prints of the manufacturers—in a wide variety of fin spacings and fin diameters—in copper, brass or steel fins, with copper, brass and steel tubes. Manufacturers are invited to test McCord Condensers and let McCord Condenser performance speak for itself.

The spiral copper fins are attached so firmly that they actually cause a rifle-barrel effect inside the tube, creating greater turbulence and faster heat dissipation.



Wedge-shaped cross-section of fin, showing greater thickness of metal where it joins the tube which gives better metal-to-metal contact and hence faster heat dissipation.



REFRIGERATION ACCESSORIES DEPARTMENT OF McCORD RADIATOR & MFG. CO. DETROIT, MICH.

Our Little Girl Reporter

What She Saw and Heard at the Copeland Convention

—By Gertrude Stanton—

Milling-around Stage

The first part of any convention is fun. Nobody knows what to do or where to go, and everyone has a big time finding out.

Everyone was feeling great—that anticipatory mood. Everyone had a fresh haircut and a fresh shave, and had had a good sleep on the Book Cadillac beds. The girls behind the registration desk were all dressed up, and although they pretended to complain of the hard work, they were tickled to death to get away from office routine for a day or two.

Even the factory officials, to whom this convention stuff should have been an old story, pushed about from hither to thither with as much enthusiasm and spring-up-on-the-heels as did the star salesman, or the dark, smiling, cordial gentleman who had come all the way from Havana, Cuba.

That's the thing about conventions.

Apparently they're all somewhat alike. You take so many business sessions, so much enthusiasm of a sort, a few rousing speeches, a few boring speeches, a banquet and luncheon or two, some tours of inspection, registration, free cigars, and you mix them together. That seems to be all there is to it.

But no matter how often you go, you have that same thrill over again, and even the most blase of convention-goers is soon pounding the plump shoulder-blades of the man next to him with the greatest zeal.

The confusion is terrific. Everyone is trying to register at once. The A-through-Hs get mixed up with the I-through-Ns and wait in line for perhaps a half hour before they find out their mistake.

Somebody doesn't get a ticket to a banquet.

"That's odd—it should have been in your big manila envelope."

"Oh . . . I didn't look in there."

"I lost my badge. Will you make me another?" . . . "Which Charleston? We got one of those in Illinois." . . . "Has Whoozis of Smithville registered yet?" . . . "EVERYBODY IN THE CONVENTION HALL. THE MEETING IS ABOUT TO START." . . . "Sure, I'm a subscriber already" . . . "What? You can't smoke in the auditorium?" . . . "There he is—that's the fellow."

Finally, about an hour or two after the first session is scheduled to start, everybody quiets down enough to be decoyed into the convention hall.

There's the delegation from Boston, in white explorers' helmets with red scarves about them; the delegation from Chicago, resplendent in violently purple soft hats; the delegation from Detroit, in blue caps like 40-and-8 chapeaux.

And then out on the stage saunters Mr. McElhinny, "Mac" to everybody at the convention, than which, as a convention marshall, there is no whicher.

The cheers are loud—regular first-session cheers—but they get louder instead of softer every time he comes in view as the convention wears on.

He engineers the order of events beautifully. There is just so much serious talk, and no more. Then there is an act of the little play which runs the whole course of the convention, or perhaps the curtain is pulled back to show the 1932 line, dazzling white against a blue and gold and black background.

Or maybe he merely starts emphasizing his points with sharp little claps of his hands—and watches heads come up, attention return to what he is saying. He's a showman, and this is a show.

* * *

Incognito

It was one of the five-minute intermissions, and everyone had lit his cigar, or his cigarette, and was standing about the lobby laughing and talking with the enjoyment in being noisy that comes after sitting listening for an hour.

In one corner, not missing a thing, but apparently unnoticed, was Mr. Ruthenburg, president of Copeland Products, Inc., and chairman of the refrigeration division of the N.E.M.A.

He's a big man, and a dynamic one, and it seemed odd that nobody noticed him. But he stood quietly, and studied the moving crowd in the lobby, and seemed to be greatly pleased with the spectacle. He stood for several minutes, and presently a big service-man lumbered over to him.

"Mr. Rutherford?" he shouted. "My name's . . ."

Mr. Ruthenburg's pleasant expression broke into a broad smile, and he shook hands heartily and said "Ruthenburg, but I'm mighty pleased to meet you."

Once seen, he was surrounded until time for the session to re-open.

* * *

Mr. and Mrs.

The charming little woman was standing very close to me so that I couldn't help but hear. She was just the kind of a wife that I'd choose if I were a man. Attractive, dressed in perfect taste, a nice smile, a nice voice, altogether a lovely person. Her husband, genial and smiling, approached with two other men. They were introduced.

"I wonder if you'd mind not coming tonight to the banquet," said her husband, speaking rapidly, and smiling broadly at everyone, to show that everything was going to be all right.

"Why—uh," said the charming woman.

"Now—now you know how we'd love to have you—really," said her husband, patting her arm.

"Yes indeed," came the reassuring chorus from his bodyguard.

"Why no, dear, I don't mind. I won't come, then. You go right ahead," said the woman, smiling, and patting *his* arm.

"Now—ah—you see how it is. I really don't think you'd be terribly interested. Long speeches and lots of cigar smoke and so on," and he waved his hand vaguely.

Deprecating sounds from the bodyguard.

"Really, I'd much rather stay here, and perhaps see a show," said his wife. "I'll see you at the hotel, then? Now run along. I'll be all right."

He patted her arm again, nervously, and beamed on her. Then, apparently before she might have a chance to change her mind, he ducked through the door, putting on hat and coat as he scuttled.

The amusing thing about the whole affair was that while he probably went on to the banquet and told with gusto how he "was afraid he'd have to bring the wife along, but at the last minute he got out of it," if he could have seen the genuine relief on his wife's face when she turned away from bidding him goodbye, he would have seen that she had dreaded the party all the time.

* * *

Ad Men and Cigars

Are all advertising men tall, and loose-jointed, and easy-moving? They all were at this convention.

Paul Cornell, head of the agency that has the Copeland account, was such a man, and Ralph Douglass might have been his cousin, and so might O. Eastman, Mr. Douglass' assistant. The three of them, together, looked like the start of a wonderful basketball team.

One of the most interesting people at the convention was the man who gave out the cigars. He was rotund, and pink-cheeked, and smiling. He had a little fringe of white hair around the back of his head, and round, shining glasses.

"I'll bet," he confided, "you can't guess how old I am."

I looked at him, and the way he moved, and at his clear complexion.

"Oh," I said slowly, "about 65?"

He laughed out loud with delight.

"Well sir," he said, "I'm 81 years old."

It was unbelievable. He hadn't a wrinkle in his face; his eyes were clear, his hands were square and firm, not wrinkled and shaky like most 81-year-old hands. He was immensely pleased to be told that it was unbelievable, and continued, "and I've got every one of my own teeth left. . . . hee, I goh (talking with his mouth wide open so that I could see his teeth, then talking normally again) all my own teeth left. Pretty good, isn't it? Yes, sir, pretty good."

Later on, he was handing one of his cards to a man who had complimented him on the quality of his cigars. "I'll bet," he confided to him, "you can't guess how old I am." And I heard the man say, a little later "I can't believe it."

* * *

Second Morning

The second morning might well have been designated the Season of the Tall Stories.

"Well . . . well . . . well. So he lives and breathes," or a variation of that, greeted the various delegates as they joined their friends—a little late, perhaps, but otherwise apparently fit and ready for a day's work.

It was a contest. There were choruses of "What time did you go to bed?" "What? Did you go to bed?" "The last time I saw *you* . . ." "Anybody seen John yet?" all over the lobby. Apparently the man who had stayed up latest won.

Still other yarns dealt with a battle which had taken place at the banquet Monday night, with lump sugar as ammunition on the one hand, and hard rolls as ammunition on the other. They provide no lump sugar, and nary a hard roll could be seen, at the Tuesday banquet, we were told. Spoil sports.

FRIGIDAIRE ISSUES BOOKLET BASED ON USER'S FINDINGS

DETROIT—A Frigidaire User's Experience Report, giving exact figures on weekly savings gained by the use of electric refrigeration is the latest sales tool placed in the hands of Frigidaire salesmen by the sales promotion department of the Frigidaire Detroit branch.

One hundred and seventy-three housewives contributed figures to the report, which is drawn up on a sheet more than 4-ft. long, but which folds up into a handy sheet that will fit into the salesman's kit.

These housewives made out individual reports dealing with these four factors: 1. Savings through quantity and bargain buying; 2. Savings through eliminating food losses; 3. Savings through reduced refrigeration expense; 4. Total savings.

Average weekly savings gained through quantity and bargain buying amounted to $1.06, the chart shows, while savings made through the elimination of food losses were $.71.

Savings through reduced refrigeration expense (over the use of ice) were shown to average $.69 weekly.

A total average weekly savings of $2.46 or $10.57 on a monthly basis is thus shown, this figure demonstrating the validity of the salesman's argument that the refrigerator will pay for itself.

It is also possible, sales promotion manager A. G. Letherby points out, that one of the 173 women listed will be a friend of the prospect.

GEORGIA POWER MEN ON TOPPERS' TRIP

ATLANTA—Thomas L. Barber and R. F. Broadbent of the Georgia Power Co. left Jan. 19 with the 150 best General Electric refrigerator salesmen in the southern territory for Havana, Cuba.

1929 California Sales Set at $9,211,871

WASHINGTON, D. C.—The first census of wholesale distribution ever taken for the United States reveals that 1929 net sales of 16 electric refrigerator wholesale distributors in California totaled $9,211,871, of which 58.54 per cent, or $5,392,931 were credit sales. The latter term includes all sales made on any deferred payment basis.

This Wholesale Trade Bulletin (listed as U. S. Department of Commerce publication Distribution No. W-102), covering wholesale operations of the year 1929 for California, was prepared by the Bureau of Census under the supervision of Robert J. McFall, chief statistician for distribution, and Theodore N. Beckman, in charge of wholesale distribution, assisted by Nathanael H. Engle and C. E. Warner, Jr., experts in marketing and Charles D. Bohannan, in charge of agricultural and rural distribution.

The report further shows that California wholesale distributors made retail sales amounting to $169,289 to ultimate consumers, and $10,000 to industrial consumers.

Of the year's $2,443,968 total expenses of these establishments, $1,347,752 were paid as salaries and wages to 1,058 employes. This figure does not include the income derived by proprietors and firm members.

From table No. 10 of these 83 pages of statistical matter one learns that 574 of these employes were salesmen whose salaries amounted to $635,109, while $104,038 went to 23 hired executives.

The following listings of the number of persons reported on the payroll of these 16 companies indicate employment turnover: April 15, 1929—697; July 15, 1929—786; Oct. 15, 1929—742; Dec. 15, 1929—692.

KELLER HANDLES RANGE DIVISION FOR BENNETT CO.

SAN FRANCISCO—C. K. Keller has been appointed range department manager for the L. H. Bennett Co., distributor of General Electric refrigerators, and more recently of Hotpoint ranges, in the Northern California territory. Mr. Keller was promoted from apartment house refrigerator sales.

Wholesale range sales will be under the direction of H. A. Cram, formerly operating the same position with the General Electric Hotpoint factory branch. Mrs. M. M. Ritter will have charge of the home service department.

In merchandising the ranges, all salesmen are permitted to secure range prospects on canvass calls. These prospects are then turned over to the range sales specialists attached to each of the eight retail stores operated by the distributor. These specialists also assist the dealers supplied by the L. H. Bennett Co.

All told, the distributing concern will have more than 250 sales outlets for Hotpoint ranges, according to L. H. Bennett, president.

GIBSON FEATURES PORCELAIN LINE OF REFRIGERATORS

GREENVILLE, Mich.—A new line of all porcelain refrigerators at popular prices is being featured this year by the Gibson Electric Refrigerator Corp.

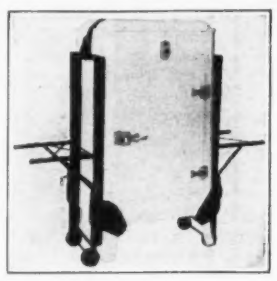
All models have as standard equipment the buffet top, broom-high legs, cast manganese bronze hardware (chromium plated), Isolantite shelf supports. Gibson announces as an exclusive feature the fact that Gibson models are now equipped with rubber cushion foot pads, which act as vibration insulators and protect floor surfaces.

BUYER'S GUIDE

Manufacturers Specializing in Service to the Refrigeration Industry

SPECIAL ADVERTISING RATE (this column only)—$12.00 per space. Minimum Contract for this column—13 insertions in consecutive issues.

All advertisements set in uniform style of type with standard border. Halftone engravings of 100-line screen, either outline or square finish. No reverse cuts or heavy black effects. No charge for composition.



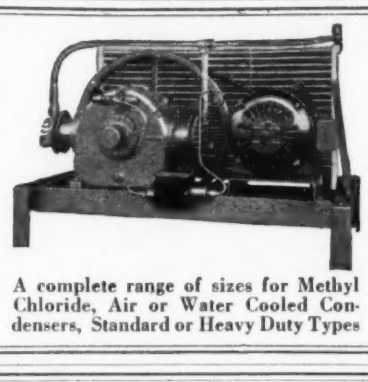
EASY-WAY CARRIERS

With an Easy-Way Carrier, any household refrigerator, small or large, can be delivered by two men quicker, better, cheaper than by any other method. Delivery damage to cabinets or to customer's premises practically eliminated.

MONEY-BACK GUARANTEE. If you find Easy-Way not as represented, it can be returned C.O.D. within 10 days from invoice date.

Costs only $26.50

R. & R. APPLIANCE CO., INC.
315 N. MAIN ST. FINDLAY, O.



BAKER Commercial Refrigerating Units

The Profitable Answer to Every Refrigerating Need

Distributor's Inquiries Invited

BakerIceMachineCo.,Inc.

Manufacturers of Ice and Refrigerating Machinery for more than twenty-five years

1518 Evans St. Omaha, Nebr.

A complete range of sizes for Methyl Chloride, Air or Water Cooled Condensers, Standard or Heavy Duty Types

Manufacturers and Assemblers of Electric Refrigeration

are finding BRUNNER Engineering Service highly effective in performance of equipment and economy of production. Brunner Manufacturing Co., Utica, N. Y.

26 Years' Experience

HIGH SIDES and COMPRESSORS by BRUNNER

1932 REFRIGERATION DIRECTORY

Here's the guide you need for complete buying information. All sources of supply listed four ways: Alphabetically, by Trade Names, by Classified Products, Geographically. Latest statistical data. 300 and more pages, 6 by 9 inches, cloth-bound.

Advance Orders now at *half* price

After publication, the DIRECTORY will cost $2.00 a copy. Special pre-publication price of $1.00 a copy. Order your DIRECTORY now—save $1.00.

Business News Publishing Co., 550 Maccabees Bldg., Detroit, Mich.

FULCO Refrigerator COVERS

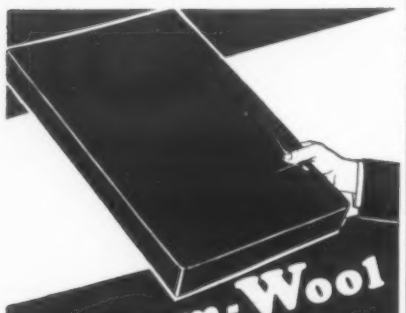
Insure deliveries without scratched or broken enamel. Write for prices.

Fulton Bag & Cotton Mills

THE IMITATION FOOD PRODUCTS CO.
107 Lawrence St.
Brooklyn, N. Y.

Entering the Eighth Year of successful business

Prices in our catalog of January, 1931, are reduced 20 per cent.



Balsam-Wool Sealed Slabs
EFFICIENT
PERMANENT
Completely satisfactory Refrigerator Insulation

WOOD CONVERSION COMPANY
Industrial Sales Offices:
CHICAGO, 360 N. MICHIGAN AVE.
New York, 3107 Chanin Bldg;
Detroit, 515 Stephenson Bldg;
San Francisco, 149 California St.

BUYER'S GUIDE

Manufacturers Specializing in Service to the Refrigeration Industry

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The DeLuxe Range at a Regular Price

ELECTROCHEF

the Modern Electric Range with

BEAUTY · SPEED · ECONOMY · ATTENTION VALUE

ELECTROMASTER, INC.

1803 E. Atwater St. Detroit, Mich.

Hard and Soft

Rubber Parts for Electrical Refrigerating Ice Cream Cabinet Parts, including

Lid Collars, Sleeves, Brine Hole Stoppers, etc.

Specializing in Rubber Parts manufactured to customer's specification

Dryden Rubber Company

1014 S. Kildare Ave. :: Chicago, Illinois

KASON HINGES

NEW!

Pat. Des. No. 85477

Send for Samples on Approval

Kason Hardware Corp., 61-67 Navy St., Brooklyn, N.Y.

DRY AS SAHARA

Why take unnecessary chances on lumber from unknown sources? We not only ship dry Sitka Spruce, but we

GUARANTEE TO DELIVER IT DRY *in any quantities desired* AS YOU NEED IT

Write for descriptive literature

C. D. JOHNSON LUMBER COMPANY

PORTLAND OREGON

CABINETS

Lacquered Steel and Porcelain Exteriors

Sizes stocked from 3½ to 8 cu. ft. net capacity, also built to specifications for unit installation.

Cabinets for Multiple-jobs

ILLINOIS REFRIGERATOR CO.

MORRISON, ILL.

ALL REFRIGERATORS LOOK ALIKE TO

AMIGO

REFRIGERATOR CLEANER

A million owners waiting for it. Polishes as it cleans—Lacquer—Porcelain—Hardware—Shelves—Freezing Trays

Distributors and Dealers write for sample

AMIGO PRODUCTS CO.

1511 S. Vermont Ave. - Los Angeles, Cal.

YOUR ADVERTISEMENT

in this Buyer's Guide Column will be seen by distributors, dealers and refrigerator manufacturers throughout the entire world.

SPECIAL LOW RATES

make it easy to keep industry buyers constantly informed of your products and service.

Electric Refrigeration News

550 Maccabees Bldg. Detroit, Mich.

REQUESTS FOR INFORMATION

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

Answers to most inquiries for statistical information and sources of supply will be furnished by the 1932 Refrigeration Directory and Market Data Book to be issued in February. Price $2.00.

Testing Laboratories

Query No. 650—"Can you give us the names of any laboratories where new models of refrigerated display cases can be given a thorough engineering test?"

Answer—George B. Bright Co., 2615 Twelfth St., Detroit, and Electrical Testing Laboratories, 80th St. and East End Ave., New York City.

Source of F-12

Query No. 651—"Where can I purchase F-12?"

Answer—Communicate with Kinetic Chemicals, Inc., Wilmington, Dela.

Porcelain Liners

Query No. 652—"Can you furnish us a list of manufacturers who make a specialty of porcelain liners?"

Answer—Challenge Stamping & Porcelain Co., Grand Haven, Mich.

Parts for Assembling Units

Query No. 653—"What companies manufacture for sale to assemblers of domestic electric refrigerators materials such as cooling units, tubing, fittings, and controls?"

Answer—Cooling units: Mullins Mfg. Co., 605 S. Ellsworth Ave., Salem, O.; Detroit Lubricator Co., 5842 Trumbull Ave., Detroit; Fedders Mfg. Co., 57 Tonawanda St., Buffalo. *Tubing*: Wolverine Tube Co., 1415 Central Ave., Detroit; Revere Copper & Brass, Inc., Rome, N. Y.; French Mfg. Co., Waterbury, Conn.; Bundy Tubing Co., 4815 Bellevue Ave., Detroit. *Fittings*: Mueller Brass Co., Port Huron, Mich.; Commonwealth Brass Corp., Commonwealth Ave. & G. T. R. R., Detroit; Kerotest Mfg. Co., Pittsburgh; Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago. *Controls*: Penn Electric Switch Co., 306 12th St., Des Moines, Iowa; Minneapolis-Honeywell Regulator Co., 2807 Fourth Ave., South, Minneapolis, Minn.; General Electric Co., Schnectady, N. Y.; Detroit Lubricator Co., 5842 Trumbull Ave., Detroit.

Imitation Food Sets

Query No. 654—"Will you please forward me the names and addresses of companies manufacturing imitation food sets?"

Answer—Imitation Food Products Co., 107 Lawrence St., Brooklyn.

Engineering Schools

Query No. 655—"What schools offer courses in electric refrigeration?"

Answer—Utilities Engineering Institute, 404 North Wells St., Chicago; National Technical Institute, 4300 Euclid Ave., Cleveland; Refrigeration Training School and Shops, 101 Blvd. of the Allies, Pittsburgh.

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other materials recently issued.

Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

Gibson Electric Refrigerators

"Cold Gold from Gibson" is the title of a book showing Gibson models and features, addressed to prospective dealers and distributors, and just now ready for distribution. The keynote of the book, which is finished in gold and black, with two-color printing in red and black on inside pages, is: "Pour cold gold into your pockets and keep it there. Stock the Gibson."

The book shows pictures of the Gibson factory and various scenes in the manufacture of the refrigerators. Two pages carry pictures of executives of the corporation. Models and their specifications and features are shown on other pages.

Copeland Products

A description of Copeland milk cooling equipment for dairies located on or off the power lines is the copy contained in one of the 1932 pieces of Copeland literature. On cream-colored stock, printed in yellow and black, it shows views of various dairy installations by Copeland.

Copy discusses better quality of milk, increased income from using Copeland equipment, reduced cost of producing the milk. Various types of condensers are also pictured and described. Letters from users of Copeland dairy equipment are included in the booklet.

Copeland has also issued a new book on "How to use your Copeland," with instructions on cleaning, defrosting, freezing desserts, etc., and a generous supply of refrigerator recipes.

A third piece of literature is in the form of a mailing piece, and concerns "Refrigeration Beyond the Power Lines."

REFRIGERATION LINES SHOWN TO RADIO MEN

(Concluded from Page 1, Column 2)

this issue of ELECTRIC REFRIGERATION NEWS.

Powel Crosley, Jr., president of the Crosley Radio Corp., also spoke on this program, as did Gardner Howland, chairman of the merchandising bureau of the N. E. L. A.; L. B. Manning, vice president of the Cord Corp.; Paul B. Klugh, vice president and general manager of the Zenith Radio Corp.; and Martin J. Wolf of Chicago, market adviser.

James Aitken, president of the National Federation of Radio Associations, and Louis Buehn, president of the Radio Wholesalers Association, presided.

In charge of C. W. Thayer, sales manager of the Copeland Refrigeration Co. of Chicago, the Copeland exhibit included 4½-, 5-, and 9-cu. ft. porcelain boxes, and 5- and 8-cu. ft. lacquer boxes. Also on display were a water cooler, room cooler, 1-hp. commercial unit, fin coils, and cutaway compressor.

The Majestic exhibit, arranged by the Harry Alter Co., Chicago distributor of Majestic refrigerators, included a 4-cu. ft. model, which sells for $169.50 installed in Chicago; a 5-cu. ft. model, which can be installed in Chicago for $255; and a 7-cu. ft. box, which retails at $260 installed in Chicago. A cutaway model was also on display.

Harry Alter, distributor, and Max Geisler, his advertising and sales promotion manager, were in charge of the Majestic exhibit.

Norge refrigerators on display included 4.3-, 5.5-, and 6.8-cu. ft. models in both lacquer and porcelain finish, retailing from $179 to $279. R. P. Walsh, Gene Schwartz, Frank Lenchan, B. Menard, and George Wertzler were in attendance.

The complete Leonard line, including lacquer models in 4-, 4½-, 5½-, 6½-, and 7½-cu. ft. sizes, and 5½- and 7½-cu. ft. porcelain boxes, was exhibited by the L. C. Wiswell Co., Chicago distributor.

Sales Manager C. S. Tay of the Wiswell Co. was in charge of the Leonard exhibit. He was assisted by H. O. Kennedy, F. A. Aylesworth, M. A. Hamel, and L. C. Wiswell, Jr. R. W. McCaskey and R. R. Ludington from the home office in Detroit were also present.

Crosley showed its new 4½- and 5½-cu. ft. boxes, retailing respectively for $99.50 and $139.50 f.o.b. Cincinnati. The following men from the Chicago Crosley branch distributorship attended the exhibit: George Bean, D. Siskin, Frank Bremer, Charles Sheets, George Irving, J. J. Riley, and Paul Block.

Personally directed by L. V. Whitney, Chicago distributor, the Gibson show included 3-, 4-, 5½-, and 7½-cu. ft. models, and two models finished entirely in black, a 3-cu. ft. portable model, and a 7½-cu. ft. box. Advertised prices ranged from $169.50 to $335. Carolyn Clayton, home economist, talked to the women who came to the exhibit.

Williams Ice-O-Matic displayed 5- and 6-cu. ft. models. M. V. Nordstrom, M. E. Ticen, A. Rogers, and H. B. Austin were in charge of the exhibit.

Also included in the radio show were vacuum cleaners, sewing machines, clothes washers, electric dishwasters, electric clocks, and an "electrical maid," which serves as a clothes washer and ironer, dishwasher, fruit reamer, egg beater, cooker, toaster, pot and pan scraper and polisher, knife sharpener, meat grinder, and hair dryer.

Television programs were broadcast from the show, and were received there on a 10-foot square screen. Among the stars who appeared on this screen were Doris Robins, Ben Bernie, Wayne King, Ted Weems, Herbie Kaye, Paul Specht, Al Jolson, George Jessel, Mitzi Mayfair and Hal LeRoy of the Ziegfeld Follies, and Dolores Gillen of the National Broadcasting Co.

THE CONDENSER

ADVERTISING RATE fifty cents per line (this column only).

SPECIAL RATE is paid in advance—Positions Wanted—fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each. All other classifications—fifty words or less, one insertion $3.00, additional words six cents each. Three insertions $8.00, additional words sixteen cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Building, Detroit, Mich.

POSITIONS WANTED

SERVICE or installation man for commercial or household equipment. Thorough technical training, practical experience, clean character, excellent recommendations. Single, can travel anywhere. Salary not main object. Connection with reputable concern of prime importance. Have own modern tools. Box 410.

YOUNG American, college trained, proven sales and executive ability, willing to travel, pleasing personality, experienced with household equipment. Employed at present in own business, formerly managing director of Norge British firm in Buenos Aires, Argentina. Well connected in U. S., western Europe, eastern, southern and central America. Familiar French and Spanish. Box 411.

WANTED—Sales position with manufacturer or distributor, preferably in Pennsylvania territory. Six years' experience as successful Kelvinator dealer, but ambitious to climb higher in the industry. Good personality, capable, reliable, industrious and have executive ability. Box 412.

EMPLOYED, experienced service and installation man wishes connection with good-sized dealer or distributor in Middle West who appreciates results. First-class work. Four years' experience in Kelvinator domestic and commercial service and installation, also other makes. Twenty-four years old, single, good habits and character. References from previous employers. Capable of taking charge of service department. Box 413.

WANTED—Connection with reliable concern, manufacturer or public utility preferred, as sales manager or supervisor. Am 35 years of age. Have had over 10 years' experience with Frigidaire as salesman, dealer and for the past three years sales supervisor for large public utility. Can furnish excellent references. Address S. E. Halla, 1829 E. Fifth St., Duluth, Minn.

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1-27-32

Interesting People at Copeland's Annual Convention

E. A. Terhune, Boston, and Benjamin Binder, Newark, study 1932 Copeland advertising plans with Ralph Douglass, advertising manager (right), and his assistant, O. Eastman (standing).

The Big Three

Here we have the heads of the Copeland organization. Left to right: W. R. Wilson, chairman of the board; W. D. McElhinny, vice president in charge of sales, and Louis Ruthenburg, president.

Frank Williams (left), Vice President Ed Brown, Consulting Engineer Glenn Muffly (right), and Chairman Wilson (standing), were all present at the first Copeland convention seven years ago.

Presidents of the three factory branches discuss 1932 sales plans. Left to right: Ralph Graham, Detroit; Ken Baxter, New York, and H. T. Kessler, Chicago.

E. A. Terhune and Bill Lyons brought this delegation of sales executives from Boston.

H. M. Robbins, Copeland export agent (second from left), talks shop with H. C. Lewis and N. N. Browne, Toronto, and Jose Villaamil, Havana, Cuba.

Harry Burman, Grand Rapids Store Equipment Co., discusses commercial business with N. Baraban, Kansas City, Mo.

Carl Windel, national champion salesman (third from left), brought this group from Springfield, Ohio.

Edmund M. Winchester, Baltimore, points out an interesting bit of news to C. A. Cairns and Charles Liske, Buffalo.

Ken Baxter assembled his New Yorkers on the stage for this picture.

Here we have the B. O. R. group from Reading, Pa., at the Copeland factory.

WRITTEN TO BE READ ON ARRIVAL

Engineering Section

IN TWO PARTS PART TWO

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

The business newspaper of the refrigeration industry

ISSUED EVERY WEEK
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TEN CENTS PER COPY
THREE DOLLARS PER YEAR

4 WATER COOLERS ARE INTRODUCED BY WESTINGHOUSE

New Models Finished In Black Micarta, Aluminum

MANSFIELD, Ohio—Finished in black Micarta, and featured by dual-automatic temperature control, four Westinghouse water coolers are being introduced this month. Two pressure coolers and two bottle coolers comprise the line.

The motor and compressor are enclosed in a hermetically sealed shell of steel and lubricated by a permanent supply of oil. All models are equipped with the 7-point automatic temperature selector and automatic start and restart to keep outlet water temperatures at 50° F.

It is claimed for the Micarta paneling, a composition developed and perfected by the Westinghouse Electrical & Mfg. Co., that it does not peel, chip, burn or turn color. The panels are set in a steel frame, and given an added decorative effect through inlaid aluminum strips. All hardware is chromium plated brass.

The compressor on all models is a Westinghouse hermetically sealed reciprocating type, with forced draft cooling of the finned tubing condenser. It is operated by a ⅛-hp. motor.

Two of the models, the CMB-4 and the CMT-4, have a special storage compartment for bottled beverages and fruits, this storage space being so adapted that it may be conveniently placed under lock and key.

The model CMT-4 pressure cooler is 18¾ in. wide, 18¾ in. deep, and 43 in. high. It has a button pressure type faucet. The top is of black porcelain enamel on cast iron. The waste basin

(Concluded on Page 2, Column 5)

REFINEMENTS MADE IN 1932 KELVINATORS

DETROIT—Seventeen new models are included in the 1932 Kelvinator line which has just been publicly announced.

The line has been divided into four classes, the "K" line which supplants the 1931 Yukon models, the "PK" models which are porcelain finished cabinets of the "K" line, the "S" line which is similar to the same line in 1931 models, and the DeLuxe line.

In insulating cabinets in the new line, Kelvinator engineers have extended the use of hot hydrolene, an asphalt, in sealing the Kelvatex insulation. The slabs are dipped in the hydrolene bath before being placed in the cabinet, and then are sealed at every point of contact with the cabinet. The thickness of Kelvatex at the top of the cabinet has been increased one-half an inch.

Each model this year carries a cloisonne name plate. The legs on the cabinets are higher this year and have been designed so that the cabinet can be moved more easily.

Doors are of full-pan porcelain construction, and the door gaskets are of live rubber. The door trim is bakelite, while the hardware is two-tone chromium. The shelf supports have been covered with live rubber to absorb vibrations, according to Kelvinator engineers.

The cooling unit in the new models is enclosed by a porcelain baffle which also contains the control panel of a combination defrosting and overloading

(Concluded on Page 2, Column 1)

MUELLER BRASS REPORTS SALES INCREASE OF 296%

PORT HURON, Mich.—Mueller Brass Co., here, reports an increase of 296 per cent in their sales of streamline copper pipe and fittings for the fiscal year ending Nov. 28, 1931, as compared with the preceding year.

For the 13 periods just ending, their sales totaled $448,555.32, in spite of the fact that the building market has shown a decline over this same period and that copper prices are down. This sales figure was divided almost evenly between the mueller patented fitting and copper pipe, according to officials of the company.

Solid Comfort the Year 'Round

A Frigidaire air conditioner adds to the comfort and convenience of Milady's lounging room.

CHICAGO ASRE HEARS TALKS ON CORROSION

By John T. Schaefer

CHICAGO — Corrosion studies have proved that the problem of preventing corrosion on the surfaces of metals is chiefly a problem of preventing corrosive action of a metal *in solution*, Thomas Hay, metallurgical engineer for the Republic Steel Corp., Youngstown, Ohio, told members of the Chicago A.S.R.E. who gathered in the Engineers' Club, here, Monday night, Jan. 19, for "Corrosion" night.

Following Mr. Hay on the program was C. C. Snyder, metallurgical engineer of the stainless division of the Republic Steel Corp., Massillon, Ohio, who discussed the development, properties, and application of stainless metals.

"Only iron *rusts*," Mr. Hay declared, "all other metals *corrode* when their surfaces are attacked. And although primary physics and chemistry texts say that iron and oxygen don't mix under 400° F., we do know that these two elements mix at ordinary temperatures when they are together in a solution."

The first steps in refining ferrous metals to get a greater resistance to solution were made about 25 years ago, Mr. Hay explained. At that time it was

(Concluded on Page 3, Column 1)

President-elect

Informal snap of Glenn Muffly, who assumes presidency of the A.S.R.E. this week in Cleveland.

INSULANTS DISCUSSED BY DETROIT SECTION

By John T. Schaefer

DETROIT—All heat insulants commonly used in electric refrigerators depend for their efficiency on the resistance of the air film to heat flow, and on multiple surfaces to reduce radiation, H. W. Eagles of the General Electric Co., Erie, Pa., declared before the Detroit section of the A. S. R. E., in its first meeting of the year, Jan. 18.

In addition to local refrigerating engineers were gathered representatives of several important insulation manufacturers to hear Mr. Eagles discuss new developments which had been made in the paper insulation Thermocraft by the General Electric research engineers, and to hear R. H. Heilman of the Mellon Institute of Industrial Research explain theoretical problems of insulation design and testing. Considerable interest was manifest in Mr. Heilman's remarks on aluminum insulation.

Pointing out that the most efficient insulation is not necessarily the most economic, Mr. Eagles introduced the "Economy Factor" which General Electric engineers have employed as a measuring stick of insulations because it

(Concluded on Page 3, Column 4)

Taking the Dryness Out of Dictation

A Westinghouse CMB-4 water cooler improves the efficiency and appearance of a modern office.

FRIGIDAIRE'S NEW AIR CONDITIONER HEATS AND COOLS

3 New Units on Display At Cleveland This Week

DAYTON—Frigidaire Corp. has just announced a line of individual unit-type air conditioners suitable for commercial establishments, offices, restaurants, shops, private residences, apartments and hospitals. First public showing of the new products is being made to members of the American Society of Heating and Ventilating Engineers and of the American Society of Refrigeration Engineers, meeting in Cleveland this week.

Provision is made to heat, cool and cleanse the air of the room in which the unit is installed. The equipment will lower the relative humidity on hot, sultry days, and in winter, when the heated air becomes dry, will add moisture, Frigidaire engineers claim. Fans deflect and diffuse the air throughout the room.

The air conditioner, enclosed in a walnut or mahogany cover adapted to modern home and office furnishings, may be installed in place of the conventional hot water, steam or vapor radiator, it is announced.

The Frigidaire line of air conditioners shown at Cleveland consists of three models. The first, similar in size to the conventional radiator of modern design consists of a refrigerant laden cooling coil, fans for deflection and diffusion of the air without creating a draft, moisture controlling features and a heating coil to be connected with the customer's own hot water, steam or vapor heating plant.

For installation where radiator recesses or other wall niches are not available, a taller unit comparable in size and appearance to a high-boy radio cabinet is provided. A smaller, cube shaped unit is designed for installations where floor space is at a premium. It may be suspended from the ceilihg or wall or the equipment may be recessed in the wall, and secreted behind an ornamental grill.

FRIGIDAIRE MORAINES USE 2-CYLINDER UNIT

DETROIT — Twin-cylinder compressors are employed in the new Moraine models introduced to local dealers by Detroit branch of Frigidaire Corp., here, last week by H. J. Walker, manager.

Three models comprise the new low-priced Frigidaire line, ML-37, ML-48, and ML-64 offering respectively 3.7, 4.8, and 6.4 cu. ft. of food storage capacity, measured according to standards established by N.E.M.A.

The exterior finish is of Duco, two priming coats and three finishing coats being applied. The food compartment liner is finished in acid-resisting white porcelain.

A three-year factory guarantee is provided on the entire refrigerator, with the exception of the cabinet finish which has a one-year guarantee, Mr. Walker reported.

Last year's service costs in the Detroit organization were reduced 35 per cent over 1930, W. I. Buchanan, commercial sales manager, stated as the next speaker.

Then, in explaining features of the Moraine line, he pointed out that these models have the standard Frigidaire Cold Control with six temperatures available at the control dial located on the outside of the cabinet.

Chrome finished forged brass Tern-

(Concluded on Page 2, Column 4)

SEATTLE COUNCIL PASSES NEW REFRIGERATION CODE

SEATTLE—At the request of the Seattle Refrigeration Bureau, the city council has passed an ordinance which regulates the installation of mechanical refrigerators and provides for their inspection.

The new code is based on the Standard Refrigeration Code sponsored by the American Standards Association.

REFINEMENTS MADE IN 1932 KELVINATORS

(Concluded from Page 1, Column 1)

switch and the temperature selector. Freezing degrees on the new models have been increased from five to eight, to allow for three more fast-freezing speeds.

Ice cube capacity has been increased on practically all models and the cubes are oblongs rather than squares. The trays receive anodic treatment to protect the aluminum.

The "S" and DeLuxe models have been equipped with automatic electric interior lights, while the "K" and "PK" lines have been made so that they can be equipped with lights.

Two models in the DeLuxe line have been remodelled, with increased width and depth.

Complete specifications and capacities of the various Kelvinator models are reproduced below:

Specifications of 1932 Kelvinator Models

Model No.	Capacity* Cu. Ft.	Shelf** Area Sq. Ft.	Ice Cubes	Ice Melting Effect***	Motor Size H. P.	Height Inches	Depth Inches	Width Inches
K4	4.00	8.10	42	3.9	1/10	49 7/16	26 1/32	24 3/16
K4S	4.00	8.10	42	4.7	1/6	49 7/16	26 1/32	24 3/16
K5	4.94	10.34	63	3.9	1/10	51 7/16	28 7/16	25 3/4
K5S	4.94	10.34	63	6.8	1/5	51 7/16	28 7/16	25 3/4
K6	5.94	12.16	84	4.7	1/6	56 1/4	28 7/16	25 3/4
K6S	5.94	12.16	84	6.8	1/5	56 1/4	28 7/16	25 3/4
K7	6.90	14.20	108	6.8	1/5	57	31 5/8	25 3/4
PK4	4.00	8.10	42	3.9	1/10	49 7/16	26 1/32	24 3/16
PK4S	4.00	8.10	42	4.7	1/16	49 7/16	26 1/32	24 3/16
PK5	4.94	10.34	63	3.9	1/10	51 7/16	28 7/16	25 3/4
PK6	5.94	12.16	84	4.7	1/6	56 1/4	28 7/16	25 3/4
PK7	6.90	14.20	108	6.8	1/5	57	31 5/8	25 3/4
S4	4.80	8.20	42	4.7	1/6	52 1/4	23 1/16	25 5/16
S5	4.80	10.40	42	4.7	1/6	58	23 1/16	25 5/16
S7	7.00	14.90	108	8.3	1/4	58 3/8	26 3/16	31 9/16
S9	9.20	16.80	108	8.3	1/4	63 13/16	27 5/16	35
D6	6.38	12.16	108	4.7	1/6	59 3/16	27 13/16	36
D6S	6.38	12.16	108	8.3	1/4	59 3/16	27 13/16	36
D8	8.20	16.30	135	8.3	1/4	66 3/16	27 13/16	36
D11	11.68	22.73	189	8.3	1/4	68 3/8	8 5/16	48
D14	14.55	26.36	189	13.0	1/3	70 1/8	28 5/16	48
D22	22.27	41.84	243	13.0	1/3	70 1/8	28 5/16	67 11/16

*Food storage capacity, measured according to N.E.M.A. rating.
**Shelf area, measured according to N.E.M.A. rating.
***Ice melting effect per hour, A.S.R.E. rating.

Develops Coating of Aluminum

CINCINNATI—Aluminum Industries, Inc., has announced a new aluminum coating called Permite Resalum.

The base is a discovery of the Aluminum Industries Research laboratories, and the pigment a product of the Aluminum Company of America.

Descriptive literature on the coating states that it is ready mixed for immediate use, and that it is heat resisting, and thus can be used on boiler fronts, steam lines, smokestacks, annealing ovens, and furnaces without injury.

Where protection against corrosion is necessary—as in pickling rooms, foundries, gas plants, electro plating plants—this coating finds use, it is claimed.

Surfaces coated with Permite Resalum reflect between 60 and 70 per cent of the total light falling upon them.

The manufacturer claims Permite Resalum is both weather-proof and moisture-proof.

Frigidaire Moraine in Use Already

Strawberries for a shortcake coming out of a new Frigidaire Moraine.

WESTINGHOUSE ADDS WATER COOLING LINE

(Concluded from Page 1, Column 1)

is chromium-plated, and feeds a ¾-in. drain line to rear.

The model MT-8 pressure cooler is 18¾ in. wide, 18¾ in. deep, and 43 in. high. The top is of black porcelain, bubbler basin of Jade green porcelain, while the bubbler is of the angle stream type, protected by guard, and of one-piece construction.

In addition, this model has a pre-cooler consisting of two tinned copper tubes, one within the other, with waste water flowing over inside tube containing incoming water. It also has a pressure regulator mounted in rear on incoming water line to control automatically the stream height at the bubbler.

The model CMB-4 bottle cooler is 18¾ in. wide, 18¾ in. deep, and 40¾ in. high.

Pressure Type

Young lady drawing pitcher of cold water from a new Westinghouse water cooler.

The top is of black porcelain enamel on cast iron, equipped with rubber bumper ring. A 3-qt. removable chromium-plated catch basin is mounted on front.

The model MB-5 bottle cooler is 18¾ in. wide, 18¾ in. deep, and 40¾ in. high. Its top is of black porcelain enamel on cast iron, equipped with rubber bumper ring. A 3-qt. removable chromium-plated catch basin is mounted on front.

Capacity tables, in gallons per hour, of the various models supplying 50° F. water are reproduced below:

Model CMT-4

Inlet Water Temperature ° F...	60	70	80	90	100
Gallons Per Hour Capacity	11.4	2.5	3.4	2.2	1.6

Model MT-8

Inlet Water Temperature ° F....	60	70	80	90	100
Gallons Per Hour Capacity. No Pre-cooler	11.9	5.7	4	2.8	2.3
Gallons Per Hour Capacity With Pre-cooler	18	10	7.1	5.3	4

Model CMB-4

Inlet Water Temperature ° F....	60	70	80	90	100
Gallons Per Hour Capacity	11.4	5.2	3.4	2.2	1.6

Model MB-5

Inlet Water Temperature ° F....	60	70	80	90	100
Gallons Per Hour Capacity	11.9	5.7	4	2.8	2.3

FRIGIDAIRE INTRODUCES 3 NEW LOW-PRICED MODELS

(Concluded from Page 1, Column 5)

stedt hardware is employed on the new line, with a roller-bearing door latch. Bar-type, rust-resisting shelves are used, with the upper one of the "flip-type" so that it can be turned aside to accommodate high bottles.

Self-sealing tray fronts, stainless aluminum ice cube trays, and evaporator shields of white porcelain are other features of the interior appointments.

Each ice cube compartment is individually surrounded with cooling coils, Mr. Buchanan indicated, to obtain fast-freezing. Cooling coils are of copper and brass, all pressure joints in the refrigerating system being silver-soldered.

Glass drip-trays are provided, with raised ribs to encourage air circulation around them, he explained.

Specifications are reproduced below:

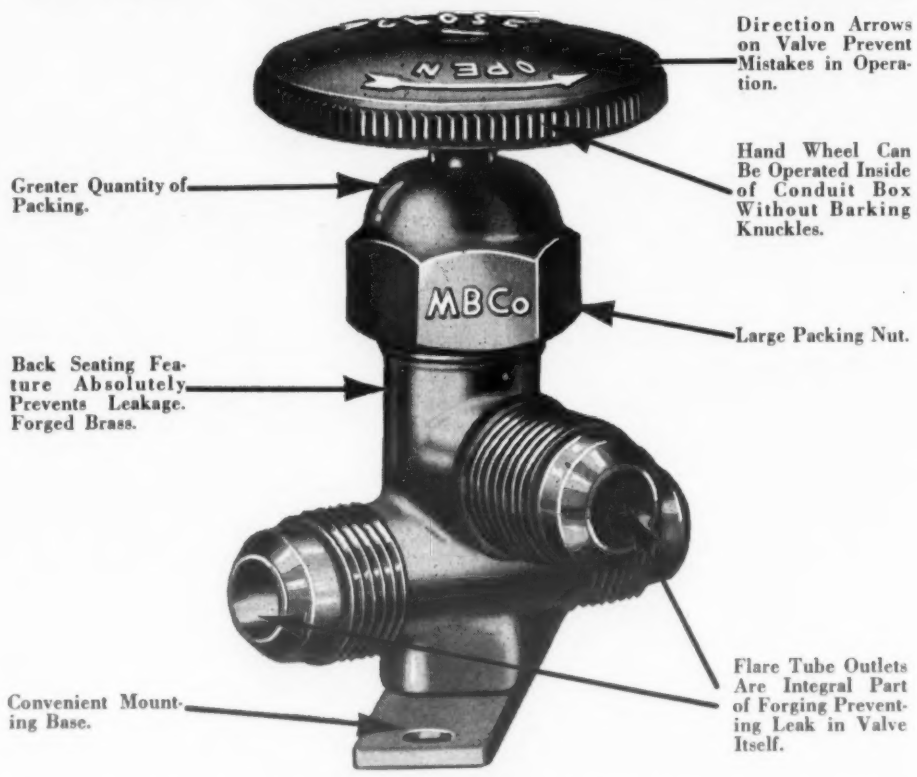
Model No.	Food* Storage Cu. Ft.	Shelf Area Sq. Ft.	Ice Cubes	Width In.	Depth In.	Height In.
ML-37	3.7	6.8	30	24	26¼	28½
ML-48	4.8	9.2	42	19½	21	22½
ML-64	6.4	12.2	42	53½	54¼	62⅝

*N. E. M. A. rating.

KELVINATOR TRUCK SHOWN AT N. Y. AUTO EXPOSITION

NEW YORK CITY—A Dodge Brothers motor truck, electrically-refrigerated by Kelvinator, was displayed at the New York Automobile Show at Grand Central Palace all last week. The gleaming white body, constructed especially by Kelvinator and mounted on a regular 1½-ton Dodge truck, was one of the chief features of the Dodge exhibit.

No More Barked Knuckles on LAY DOWN VALVES


Direction Arrows on Valve Prevent Mistakes in Operation.
Hand Wheel Can Be Operated Inside of Conduit Box Without Barking Knuckles.
Greater Quantity of Packing.
Large Packing Nut.
Back Seating Feature Absolutely Prevents Leakage. Forged Brass.
Flare Tube Outlets Are Integral Part of Forging Preventing Leak in Valve Itself.
Convenient Mounting Base.
OPEN
MBCo

This new Mueller forged valve has been designed to meet the increasing demand for a smaller and more compact valve that will stand up in the conduit box. It contains a greater quantity of packing and retains the back seating feature.

The Underwriters' Laboratory lists it as standard.

A detailed description of this new valve, as well as of the complete Mueller line of refrigeration valves and fittings, will be sent on request.

Write us, or wire at our expense

Mueller Brass Co.

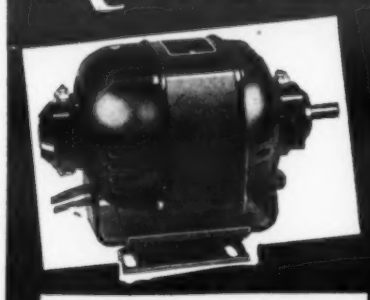
PORT HURON, MICHIGAN

MUELLER BRASS CO. OF CANADA, LIMITED, TORONTO, ONTARIO

Let us send you our new catalog containing complete information on the seep-proof, cost-reducing STREAMLINE fittings

(137)

There can be no Radio Interference



on the part of your compressor when it is driven by a cradle-mounted Leland motor—

because this motor has a rubber-impregnated spring mounting that isolates vibration within the frame structure—

because it is a brush-lifting motor and free from brush noises—

because generous bearing areas and self-filtering lubrication eliminate bearing troubles.

Write for Bulletin No. 28

The Leland Electric Co.
Dayton, Ohio, U.S.A.
Canadian Address, Toronto
Cable Address, "Lelect Dayton"

Leland Motors

CHICAGO ASRE HEARS TALKS ON CORROSION

(Concluded from Page 1, Column 2)

established that iron is more resistant to corrosion than steel, he declared.

When questioned about the specific defined difference between iron and steel, he reported that no scientific authorities had agreed on the difference, but that it is largely a matter of physical properties.

"Chemically pure iron has a definite ferrite structure under the microscope which steel lacks," he said. "In addition, iron has a thermal range not found in steel, and is less strong, more elastic, and more workable than steel."

Early searches for a rust-resisting iron indicated that it should first be made from carefully selected basic raw materials, that it should be carefully refined, and that the addition of some other metal would reduce its susceptibility to attack.

"Bronzes and other alloys were well-known, so one of the first ideas was to add copper to iron. It was found that the addition of not less than .25 per cent copper gave added resistance to solution. Copper, incidentally, actually passes into the solution with the iron, and is not just held in suspension," he said.

Effect of Molybdenum

Molybdenum also proved to impart unusual properties to iron, he explained, and an alloy with .40 per cent copper, .50 per cent molybdenum, and some manganese in solid solution with the iron appeared to give a high resistance to solution.

Molybdenum also increases the metal's resistance to fatigue, according to Mr. Hay. An alloy with a composition of this type can be worked cold, he declared, in work such as pipe threading, and bends.

"Why add a coating such as zinc to the iron," he queried, "when we know that being less noble in the electromotive series zinc will dissolve first. The answer is that when it dissolves part of the zinc goes into combination with the iron to form a protective coating."

Mr. Hay concluded his talk by pointing out that welding materials should have the same resistance to corrosion in solution as the unwelded material.

Second on the program was C. C. Snyder, metallurgical engineer from the stainless division of the Republic Steel Corp., at Massillon, Ohio.

He first traced the development of stainless metals from Breeley's experiments in 1913 at London with a 10 per cent chromium alloy which gave a metal which was resistant to salt water, through Haynes' duplication of that work here, and the barrage of patents and different trade names which resulted with the marketing of stainless steels by the various steel companies in this country.

Wants Standardization of Terms

On that point he expressed the hope that an early standardization of terms would be agreed upon by the various suppliers so that a purchaser would not be confused in buying stainless metals.

Mr. Snyder classified stainless alloys in four groups: Class A, which has 10 to 15 per cent chromium; Class B, which has 15 to 30 per cent chromium; Class C, with 16 to 29 per cent chromium, and 7 per cent to 10 per cent nickel; and Class D, which includes miscellaneous combinations.

He also classified corrosion according to the conditions under which it occurs, in the atmosphere, in a liquid, and dry corrosion at elevated temperatures.

Classes A, B, and C will resist atmospheric corrosion, he explained, while wet corrosion depends on whether the solution is an acid or an alkali, and upon the temperature and nature of the solution, and whether or not electrolysis can occur.

"Contact with non-ferrous metals should be avoided whenever possible," he advised.

Stainless Alloy, Class A

Dry corrosion at high temperatures must be controlled by special combinations of the elements that go into an alloy, he explained, higher temperatures usually requiring more chromium and more nickel.

A ferrous alloy should have at least 10 per cent chromium, he believes, and can be hardened if it has from .20 to .30 per cent carbon. The addition of sulphur and copper will aid machining of the metal, according to Mr. Snyder.

Alloys in the B group with 16 to 18 per cent chromium can be used in storing acids, and will resist oxidization up to 1,600° F., but lack qualities of ductility, being suitable for only mild draws or bends, and have brittle welds, he reported.

"Class C alloys with 16 to 20 per cent chromium and 7 to 10 per cent nickel, into which group Republic Steel's Enduro KA-2 falls, are practically non-magnetic, have good welding properties, and can be made ductile by the German Krupp method which consists of heating to 2,000° F. and rapid cooling," he said.

A carbon content from .10 to .16 per cent is standard in this metal, he pointed out, giving twice the strength of ordinary steel. When a higher carbon content is used, the metal must be cooled very rapidly or it will lose its strength. A lower carbon content is sometimes used for welded constructions subject to severe chemical attack, he explained.

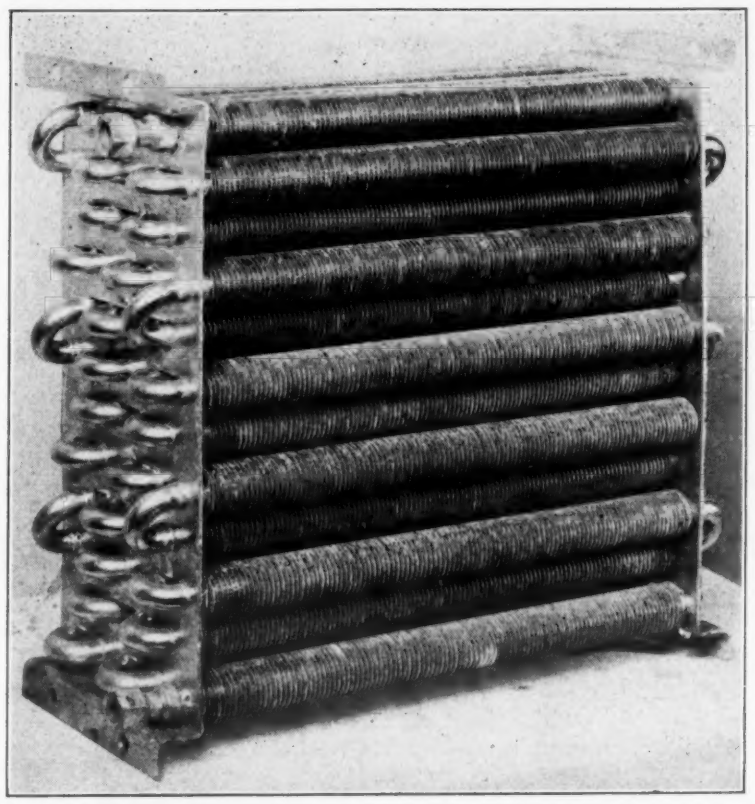
Alloys in this Class C are immune to corrosion of brines, sulphur, milk, and hard water, hence, are suitable for dairy work, he claimed, nor are they attacked by sterilizers or cleansing agents.

"The effects of low temperatures on these alloys were recently investigated in the Massillon laboratories of the Republic Steel Corp. by immersion of the metal in methyl alcohol cooled by solid carbon dioxide," he said.

Alloys in the C group held their toughness, impact, and shock resistance down to minus 200° F., and showed no chemical change, he reported.

The meeting concluded with a showing of a film depicting the manufacture of stainless metals carried on by the Republic Steel Corp.

Air Conditioning Coils



Spiral finned copper tubing heating coil for Frigidaire air conditioner.

EXPLAINS REFRIGERATION'S PART IN REFINING OF OIL

NEW YORK CITY — Refrigeration's part in refining oil was explained to the New York section of the American Society of Refrigerating Engineers Wednesday night, Jan. 20, by R. E. Manly, research engineer of the Texas Oil Co. Mr. Manley described the whole process of producing lubricating oil, and showed how it was built around the chilling of oil to remove wax.

The meeting was opened, after dinner, by President Crosby Field.

The speaker began his talk by describing the four fundamental steps in the manufacture of lubricating oil; separation of lubricating stock from the crude, preparation for dewaxing, dewaxing, and finishings. It is in the dewaxing that refrigeration is necessary. The oil must be chilled from 5 to 50° below the lowest point at which it will be used, in order to insure the solidifying and removal of enough wax to leave the oil free-flowing.

Other things are done to the wax to make it crystallize as thoroughly as possible so that it may be removed. These include dilution of the oil with naphtha, benzine, or gasoline. If the first two liquids are used, the chilling does not have to go below 5 or 10° under using point, but gasoline dilution requires a margin of 40 or 50° F.

"In chilling the oil," Mr. Manly said, "two methods are common, depending entirely on the kind of oil stock to be used. If the stock contains crystalline wax, the refrigerating coils are applied to the walls of a tank, and the oil put in the tank, as crystallized wax will adhere to a chilled surface and insulate it quickly."

With the flat chilled surface it is possible to scrape every little while. If the stock carries mostly amorphous wax, the coils run directly through the oil, as non-crystalline wax does not stick to the chilling surface.

"However," Mr. Manly said, "there is always a small amount of crystalline wax present in all lubricant stock, so that amorphous wax removing units have to be shut down periodically while the refrigerating coils are washed clean with hot gasoline."

The direct expansion method, of refrigerant, rather than the brine method, is used. It requires, Mr. Manly computed, about 35 tons of refrigeration, plus five booster tons to chill each hundred barrel unit of oil to go to the centrifuge, while about 17.5 tons are necessary to prepare a hundred barrels of oil for the solvent method of dewaxing.

BUYS WATER COOLERS

OAKLAND, Calif.—The new 3,500-seat Paramount Theatre has installed a Frigidaire water cooling system.

Aluminum Foil, Paper Insulations Discussed by Heilman, Eagles

(Concluded from Page 1, Column 4)

takes into consideration both cost and efficiency.

He defined the economy factor as the cost per board foot of the insulation divided by the heat resistance per board foot. Conversely, in specific terms, he defined it as the cost in cents per board foot times the conductance in B.t.u.'s of heat transferred per degree Fahrenheit temperature difference of the insulation surfaces per square foot of area per inch of thickness per hour.

"Since the first technical discussion of Thermocraft by J. L. Knight before the convention of the American Society of Refrigerating Engineers last spring in Kansas City, tests on the insulation have indicated that Thermocraft has a mean temperature conductivity curve about the same as cork," Mr. Eagles stated.

General Electric engineers compute the mean temperature conductivity of corrugated paper insulation, Mr. Eagles explained, by the following formula:

$K_T = K_{75}$ *plus or minus* $.00078T$

where K_T is the conductivity at the desired mean temperature in degrees Fahrenheit, K_{75} is the conductivity at 75° F. mean, and .00078 is the constant which experiments show will give the proper correction when multiplied by the temperature at which the conductivity is desired.

When questioned about the manufacture of Thermocraft, he explained that it is fabricated of a hard-finish Kraft paper, wrapped in Duplex Kraft paper, all joints being sealed with a special asphalt. The insulation has about 36 corrugations per foot.

It is accepted for installation in refrigerators if it absorbs no moisture in a three-hour submersion test in 75° F. water.

Although much of the data presented by Mr. Heilman dealt primarily with high-temperature insulations common to heating systems, he pointed out that the same laws apply to low-temperature insulations.

"It was formerly believed by most insulation engineers that the lighter in weight a substance was, the better were its insulating properties. Exceptions to this rule have disproved it," he declared.

Heat is transferred by three different ways, according to Mr. Heilman, which are radiation, convection, and conduction.

"The amount of heat transferred by radiation of one surface across space to another depends on the differences between the fourth powers of the radiating qualities of the two walls.

"It is generally believed that convection varies as the 1.25 power of the temperature difference," he said, "while the conduction of a material may be calculated on the basis of the figure for air's conduction."

Both copper foil and aluminum foil have been used for insulation in Germany, and the latter is now being used by a refrigerator manufacturer in this country, he announced.

Slides were then shown picturing the use of crumpled aluminum foil for insulation of freight cars, and of milk tanks of the United Dairies.

Conductivities ranging from .18 to .25 have been secured by stretching aluminum foil in parallel layers for refrigeration insulation, he claimed.

With air spaces up to ½ in. between the layers of aluminum foil, Mr. Heilman believes air movement, and its consequent convection, is very small. Radiation is also small, he maintains because the emissivity of aluminum is about .06.

BUNDY TUBING

COPPER

HYDROGEN

ELECTRICALLY

WELDED

Copper Hydrogen Electric Welding has for a number of years been used by us, in our product, in large volume production for some of the foremost industries. Our plant facilities are now being increased to enable us to handle general commercial welding of this type. Bundy Tubing Company is the only concern in the world equipped to render general commercial welding service on steel parts by the use of copper.

BUNDY TUBING COMPANY
DETROIT, MICHIGAN, U. S. A.

BUNDYWELD TUBING

ENGINEERING SECTION ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

ELECTRIC REFRIGERATION NEWS is published *every week.*
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VOL. 6, NO. 21, SERIAL NO. 149, Part 2, JAN. 27, 1932

Commercial Sizes

INCREASED attention to the market for commercial refrigeration on the part of small unit manufacturers is manifest in the addition of larger condensing units to several 1932 lines. Several machines using sulphur dioxide or methyl chloride have just been introduced which produce ice melting effects greater than a ton per day.

Installations of a size which formerly required two or more condensing units can now be made by these manufacturers with only one compressor. One of these new one-ton refrigerating machines will now serve a system which previously would have needed two one-half ton machines.

More Economical

Economies will be effected both in original cost of equipment, and in the simplification of installations, designers of the larger machines claim, in addition to reduced costs of operation of one large machine over two or three smaller sizes.

The design and manufacture of three- and four-cylinder compressors in the one-ton class involves technical considerations not regularly encountered by manufacturers of domestic systems. Accordingly, these machines were tested in field operation for several months before being offered through regular outlets. Now they have been introduced with the belief that they will perform properly.

Larger Cooling Units, Also

Along with the larger condensing units have been announced larger cooling coils which enable the installer to employ one evaporator where two or more were formerly used. Similar economies are expected for the larger coils; reduced purchase and installation costs, and high efficiencies.

Useful in Air Conditioning

Air conditioning is one of the developments which encouraged the design of the larger equipment, because air conditioning requires refrigeration beyond the capacity of fractional horsepower machines. A one-ton machine will handle room cooling installations as large as 10,000 cu. ft. of air, the engineers report.

Other installations which can now be served by just one refrigerating machine include large apartment houses, grocery stores, complete meat markets, restaurants, multiple water cooling systems, fairly large dairies, and ice cream hardening and manufacturing equipment.

Television

SUBSTANTIAL progress in the science of transmitting moving pictures by radio waves was evident at the Radio and Electrical Show at Chicago last week where several manufacturers of television equipment had set up demonstration apparatus.

Probably the most significant exhibition was produced on a 10-ft. square screen high up in Chicago's Coliseum where a performer's face was thrown with the clarity approximating that of pre-war movies. The flickering and occasional appearance of horizontal lines was somewhat disturbing, but the features of the face were easily recognized and the changing expressions of the performer reproduced with surprising accuracy.

Television Theatre

In an adjoining room was erected a "television theatre" in which regular demonstrations were made throughout the day on a screen about a foot and a half square. Here the definition of features was much finer, approaching the clarity of present-day movies. The voice transmission in both demonstrations was comparable to that of modern radio sets.

Compared with the hazy images produced a year ago, this year's demonstrations were encouraging. Of course, the transmitting equipment was located in the same building as the receiving equipment, and both were operated by trained engineers connected with television developments so the best results were probably obtained with the apparatus.

Something to Aim at

The high development of cinematography for the motion picture screen has induced the public to expect a degree of perfection which television still hasn't reached. But if the same measure of advancement, seen by 1931, is made each year, television is slated to become an important industry.

On Our Bookshelves

"HANDBOOK OF BUSINESS ADMINISTRATION"

Editor: W. J. Donald. Publisher: McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York City. Number of pages: 1752. Price: $7. Date of publication: 1931.

COMPREHENSIVE treatment of modern business methods as they have been developed in the business organizations of the 129 contributors to this new compendium on management, is presented as a work of the American Management Association.

W. J. Donald, editor-in-chief of the new book, also managing director of the American Management Association, has drawn from official publications of his association for source material, augmenting it by articles written by business executives and experts especially for inclusion in the handbook.

One of the pressing problems of management today grows out of the extreme specialization in executive duties which, during the last 10 or 15 years, has somewhat impaired the opportunity for that well-rounded experience which prepares an executive for promotion into general managerial positions, Mr. Donald observes in the preface. He believes that this book will meet, to some extent, the need for this education by providing in convenient form an exposition of procedures of managerial policy and technic.

The volume is addressed to four major groups: 1. Executives of general managerial rank who want a source of information which will help them to determine the relative efficiency of their own functional departments; 2. Major functional executives who are similarly anxious to maintain a perspective on progress in various sectors of their specialized fields; 3. Business executives specializing in one particular phase of a commercial operation who desire information on their own special field; and 4. Specialized executives who need a broader picture of a business operation as a means for developing their own abilities for promotional opportunities.

As impressive as the authoritative names and affiliations of the writers in the book, is the wide scope of business and industrial subjects treated in detail.

Six sections are presented in the book, one on each of the following major topics: marketing, financial management, production management, office management, personnel management, and general management.

In the first section attention is given to market research, advertising, price making, the sales force, marketing cost control, retailing, and exports.

The financial section offers articles on financial planning and control, incorporation, corporate financing, short-term borrowing, consolidations, depreciation, and insurance.

The production chapters treat organization, plant layout, machinery, research, design, production control, motion study, incentives and wage payments, quality, inspection, purchasing and storekeeping.

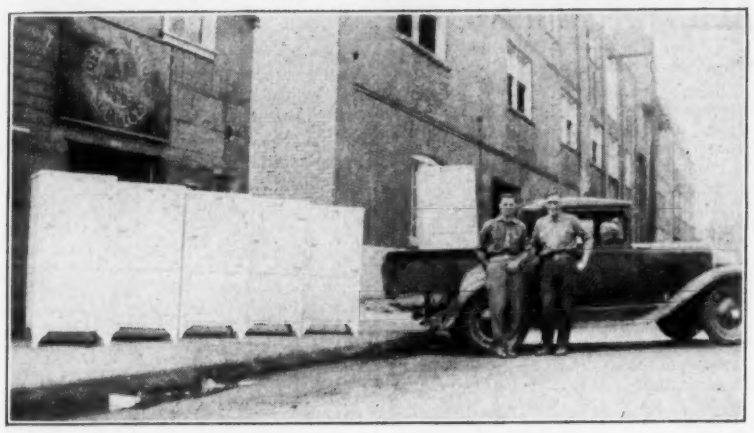
Under office management, chapters deal with that subject first in a general way, then physical factors, personnel, salary administration and promotion, measurement of output, the design and use of form, office planning and control, and branch office management.

The personnel section discusses organization maintenance of the working force, job analysis, compensation and incentives, training, meeting the hazards of the worker, employes' financial plans, collective bargaining, employe representation, and U. S. labor laws.

Under "General Management," the last section, the following chapters appear: the technic of management, management control, use of research and specialists, executive personnel problems, executive leadership, technic of group action, and public relations.

The handbook represents careful compilation on the part of its editor, intelligent treatment by its writers, and should be valuable to the studious executive who wants to know modern, approved business methods used in outside organizations.

Installing Apartment House Jobs



Harold Darragh (left), prominent Toronto hockey player and service man, with his partner, Cliff Pinke (right), in the D. & P. Refrigeration Co., which operates in Toronto, Canada.

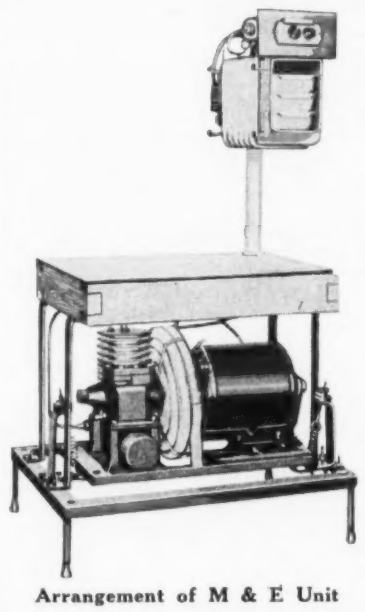
M & E COMPRESSOR BASE SUPPORTS COOLING UNIT

PHILADELPHIA—New 1932 refrigerating units of the Merchant & Evans Co. designed for installation in household electric refrigerators are being built with the evaporator mounted on a rigid support extending up from the condensing unit, according to M. P. Stoney, refrigeration manager.

"The evaporator and 'Gyroscopic' compression unit are built as one rigid assembly which rests on the floor, this assembly supporting the cabinet proper," he explains. "The latter is placed over the refrigerating apparatus to complete the refrigerator assembly."

The cabinet for this type of unit can be manufactured from one piece of steel, he claims, without any seams and without any compressor compartment door.

"In servicing, the complete unit can be removed by taking out four bolts,



Arrangement of M & E Unit

and a new unit substituted, or, if desired, the machine can be serviced in the conventional manner from the opening in the back. Should the cabinet be damaged, a new one can be placed over the machine in a short time, without shutting off the motor or losing ice," he maintains.

The evaporator is of the direct expansion type with a superheating coil in the rear, he announced. The compressor is of the one-cylinder type with a standard 1/6-hp. motor direct connected, but adjustably mounted on an eccentric bearing on its center of gravity for vertical adjustment. The eccentric is housed in a slotted aperture for alignment.

The chief feature of the drive is the motor mounting which provides for rough alignment as soon as the motor starts, and more accurate alignment when it attains its speed by the gyroscopic action of the motor.

The compressor is suitable for water and beverage cooling, Mr. Stoney points out, being built to fit in a space as small as 11½ in. wide, 11½ in. deep, and 12 in. high.

BIG REFRIGERATED TRUCK ON 860-MILE SCHEDULE

LOS ANGELES—A two-ton, 165-in. wheelbase heavy duty refrigerated truck manufactured by Dodge Brothers Corp., is being operated between Los Angeles and Cortez, Colo., a distance of approximately 860 miles one way, by W. R. Richardson and Simm Richmond of Cortez.

The truck is equipped with a 24-ft. semi-trailer, the body being refrigerated by solid carbon dioxide. It transports butter, eggs, poultry and other perishables to the West Coast and returns to Cortez loaded with citrus fruits. The roomy cab has sleeping accommodations for the relief driver.

G. E. PATENT GRANTED ON METHYL FORMATE

In view of recent interest in new refrigerants, and because A. R. Stevenson, Jr., F. H. Faust, and E. W. Roessler of General Electric Co. will present a paper on the use of the reversed refrigeration cycle in heating and cooling homes before the American Society of Refrigerating Engineers this week in Cleveland, General Electric's patent on methyl formate is reproduced in full below.—Editor's note.

Oct. 20, 1931
No. 1,828,559 granted by U. S. Patent Office.
Christian Dantsizen, of Schenectady, N. Y., assignor to General Electric Co., a Corporation of New York.

REFRIGERANT

No drawing. Application filed May 21, 1929. Serial No. 364,942.

My invention relates to a new and improved refrigerant.

I have discovered that methyl formate, ($H.COOCH_3$), as a refrigerant is superior in some refrigeration systems to the common refrigerants now in use. It possesses characteristics and properties which render it very valuable for use as a refrigerating medium. This organic substance may be used as a refrigerant without admixture with any other substance.

Methyl formate has a normal boiling point of about 33° C. Its vapor pressure at normal temperatures is thus low enough so that it can be transported in cork stoppered, glass bottles, and yet high enough at, say, −10° C to permit its use in a refrigerating machine.

This property makes it admirably suited for use with certain types of low pressure refrigerators, such as the rotary compressor types. It is heavier than, and practically not miscible with the lubricating oils ordinarily used in refrigerating machines; that is, it is not miscible in all proportions with lubricating oils.

Both of these properties are highly desirable in refrigeration. Since it is substantially not miscible with oil, there is no danger of materially thinning the lubricating oils, as is the case with organic halides which are used as refrigerants. This is a decided advantage.

It is non-corrosive and, hence, does not attack the metal parts with which it comes in contact. It is relatively non-poisonous and therefore suited for use in domestic refrigerating machines.

In use, methyl formate may be employed in a system of refrigeration, as in the compressor type, passing through the cycle of first being compressed by the compressor, then to a condenser, from there to an expansion chamber, or evaporator, and finally returning to the compressor to complete the cycle.

Since methyl formate has a low vapor pressure at high temperatures and is relatively non-poisonous, it is well adapted for use in heating systems employing the refrigeration cycle.

In such a system the heat may be absorbed from outside of the building by evaporation of the methyl formate at low pressure and temperature, and liberated by being compressed and condensed in radiators within the building to be heated.

What I claim as new and desire to secure by Letters Patent of the United States, is:

A refrigerating system comprising a compressor, said system having oil therein for lubricating the parts of said compressor, a condenser, an evaporator, and a refrigerant circulated through the system by said compressor and coming in contact with said lubricating oil, said refrigerant consisting of methyl formate without admixture with ether or any other substance which would cause it to become miscible to any substantial extent with said lubricating oil.

In witness whereof, I have hereunto set my hand this 20th day of May, 1929.

CHRISTIAN DANTSIZEN.

During the Lunch Hour

Pretty office misses gather at a Westinghouse CMT-5 for a cold drink.

BRUNNER ANNOUNCES HOUSEHOLD MODELS

UTICA, N. Y.—Five cabinet models constitute the first line of Brunner electric refrigerators, manufactured by the Brunner Mfg. Co., makers of air compressors, paint spray equipment, and car washers. Prices run from $180 to $410 list, f.o.b. factory.

The models range in size from 4.10-cu. ft. capacity to 8.34-cu. ft. capacity. Brunner refrigeration compressors, which have been on the market several months, are used in the complete Brunner refrigerator.

All of the models have a porcelain interior, and the three larger models have a porcelain exterior, the two smaller ones being finished in lacquer.

Balsam Wool fibre insulation is used in all models. Hardware is finished in rust-proof chromium plate. All cabinets are fitted with legs.

Model A-4 has a net food storage capacity of 4.10 cu. ft., a shelf area of 7½ sq. ft., and two ice cube trays freezing 30 cubes or 4 lbs. of ice at one freezing. It stands 50½ in. high, is 24½ in. wide, and is 21¾ in. deep.

Model A-5 has a net food storage capacity of 5.14 cu. ft., a shelf area of 8¼ sq. ft., and two ice cube trays freezing 56 cubes or 4½ lbs. of ice at one freezing. It stands 58¾ in. high, is 27¾ in. wide, and 24 in. deep.

Model A-7 has a net food storage capacity of 7 cu. ft., a shelf area of 10¼ sq. ft., and three ice cube trays freezing 84 cubes or 6½ lbs. at one freezing. It stands 61¾ in. high, is 30 in. wide, and 26½ in. deep.

Model D-6 has a net food storage capacity of 6.5 cu. ft., a shelf area of 10 sq. ft., and three ice cube trays freezing 84 cubes or 6½ lbs. at one freezing. It is 58¾ in. high, 35 in. wide, and 28½ in. deep.

Model D-8 has a net food storage capacity of 8.34 cu. ft., a shelf area of 12¼ sq. ft., and has five ice cube trays freezing 140 cubes or 11 lbs. at one freezing. It stands 66¾ in. high, is 35 in. wide, and 28½ in. deep.

Census Surveying Manufactures Of 1931

WASHINGTON, D. C.—The Census Bureau is now mailing its 1931 Census of Manufactures questionnaires to all manufacturers. The questionnaire is considerably smaller than that used for the 1929 canvass, due to the fact that the 1931 census is one of the regular biennial series, and does not fall in with the decennial series.

Information given in the questionnaires will relate either to the calendar year 1931 or to a fiscal year beginning April 1, 1931, and ending March 31, 1932, according to the bureau's plans.

Four major items are covered in the questionnaires, namely: wage earners employed, by months; wages paid; cost of materials, fuel, and purchased electric energy; and products by quantity and value. For a few of the industries added inquiries refer to materials consumed and machinery or equipment in use.

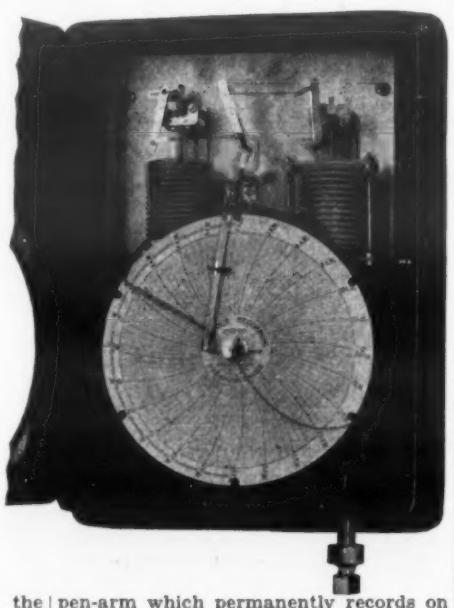
The term "wage earners" is used to designate mechanics and other manual workers, watchmen, firemen, engineers, etc. No data on the number of salaried officers and employes will be compiled in the present census.

Bristol Develops New Recording Pressure Gauge

WATERBURY, Conn.—A new direct reading, single pen absolute pressure gauge of the recording type, has just been developed by The Bristol Co.

This instrument eliminates the necessity for applying barometric corrections to vacuum readings.

This instrument can be furnished for ranges as low as from 0 to 50 millimeters head of mercury pressure, absolute or equivalent.



The new gauge is designed for use in connection with operation of turbo condensers, vacuum pans in sugar and salt drying, vacuum oil stills, vacuum packing and sealing of foods, i. e., coffee, powdered milk, and other similar items in cans, vacuum retorts in chemical plants, in the manufacture of gaseous type vacuum tubes, and other places where high vacuums are employed.

The actuating mechanism consists of two sensitive diaphragm elements. One is connected to the vacuum line, and the other is directly affected by barometric pressure variations. The resulting movements of these elements are transmitted by a differential transmitting linkage to a single pen-arm which permanently records on a suitable chart.

The case for housing the instrument is all metal. It is available for surface or flush mounting, according to officials of The Bristol Co.

CROSLEY, FADA SHOW NEW REFRIGERATORS

CHICAGO—Two prominent manufacturers of radios made first public showings of their new electric refrigerators during the Radio-Electrical Show, here, last week.

Along with its radio line, the Crosley Radio Corp. of Cincinnati exhibited its two new refrigerators in the Crosley booth at the Chicago Coliseum, while F. A. D. Andrea, Inc. of Long Island City held a private showing of the Fada refrigerator in the Stevens Hotel.

Two models comprise the Crosley line, a 4½- and a 5½-cu. ft., selling at $99.50 and $139.50, f.o.b. Cincinnati.

Fada refrigerators are offered in six models, three different sizes each in lacquer or porcelain exteriors. Fada 540 has 4 cu. ft., 650 has 5 cu. ft., and 760 has 6 cu. ft. of net storage space; these are priced at $179.50, $210, and $240 f.o.b. the Long Island City factory. Fada models 541, 651, and 761 have porcelain exteriors offering 4, 5, and 6 cu. ft. of net storage capacity, and sell for $194.50 $230, and $265 at the factory. Fada refrigerators are covered by a three-year guarantee.

The Crosley refrigerators are insulated with Dry-Zero, 3 in. in the 4½-cu. ft. cabinet, and 3½ in. in the 5½-cu. ft. box. Cabinets are finished in white lacquer, interiors in porcelain.

The 1/10-hp. Delco motor, single-cylinder vertical compressor, and finned tubing condenser are mounted on a metal base suspended on springs in a machine compartment above the food chamber. The refrigerant is sulphur dioxide. The unit may be serviced without removal, according to C. Pitsenbarger, refrigerating engineer.

Ranco controls and automatic cut-out are provided, with the temperature selector mounted on the evaporator shield. Cooling is accomplished by expansion of the refrigerant through a length of capillary tubing.

Chromium plated brass hardware has been adopted. Shelves are of flat wire.

Specifications of the Crosley refrigerators follow:

Model C-12, 4½ cu. ft. capacity; 9 sq. ft. shelf area; three ice cube trays; 63 ice cubes; 57¾ in. high; 25¾ in. wide; and 20¾ in. deep.

Model D-12-A, 5½ cu. ft. capacity; 10¼ sq. ft. of shelf area; five ice cube trays; 105 ice cubes; 67½ in. high; 32 in. wide; and 24½ in. deep.

FADA SPECIFICATIONS

The three Fada sizes are rated at 4, 5, and 6 cu. ft. of net food storage capacity, or 5, 6, and 7 cu. ft. gross capacity. The small size has 2 in. of Dry-Zero insulation, the middle one has 2½ in., and the large size has 3 in. of the same insulant. Controls are of the Ranco make and are mounted on the evaporator. Cabinets are by Seeger.

Expansion of the methyl chloride is effected through capillary tubing. The finned copper tubing condenser is of the horseshoe type surrounding the fan which extends between the General Electric 1/6-hp. capacitor motor and the reciprocating compressor.

The porcelain models have a narrow dark blue border around the top and bottom of the cabinet.

Further specifications follow:

Model No.	Shelf Area Sq. Ft.	Net Capacity Sq. Ft.	Ice Cubes	Height In.	Width In.	Depth In.
540,541	8.12	4	56	54	24½	20¾
650,651	10.21	5	84	57¼	26¼	22¼
760,761	12.11	6	84	60	30½	22¼

NEW SERVICE SHOP OPENED IN INDEPENDENCE, KAN.

INDEPENDENCE, Kan.—The Electric Shop, refrigerator, radio and appliance service concern, has been opened in the Kansas Gas & Electric Co. building here by W. J. Nickel, Art Marion, and Clay Millican.

Mr. Nickel was employed by the Kansas Gas & Electric Co. for the last nine years. The store room was leased from the public utility company.

BALTIMORE POLICE TO USE FRIGIDAIRE COOLERS

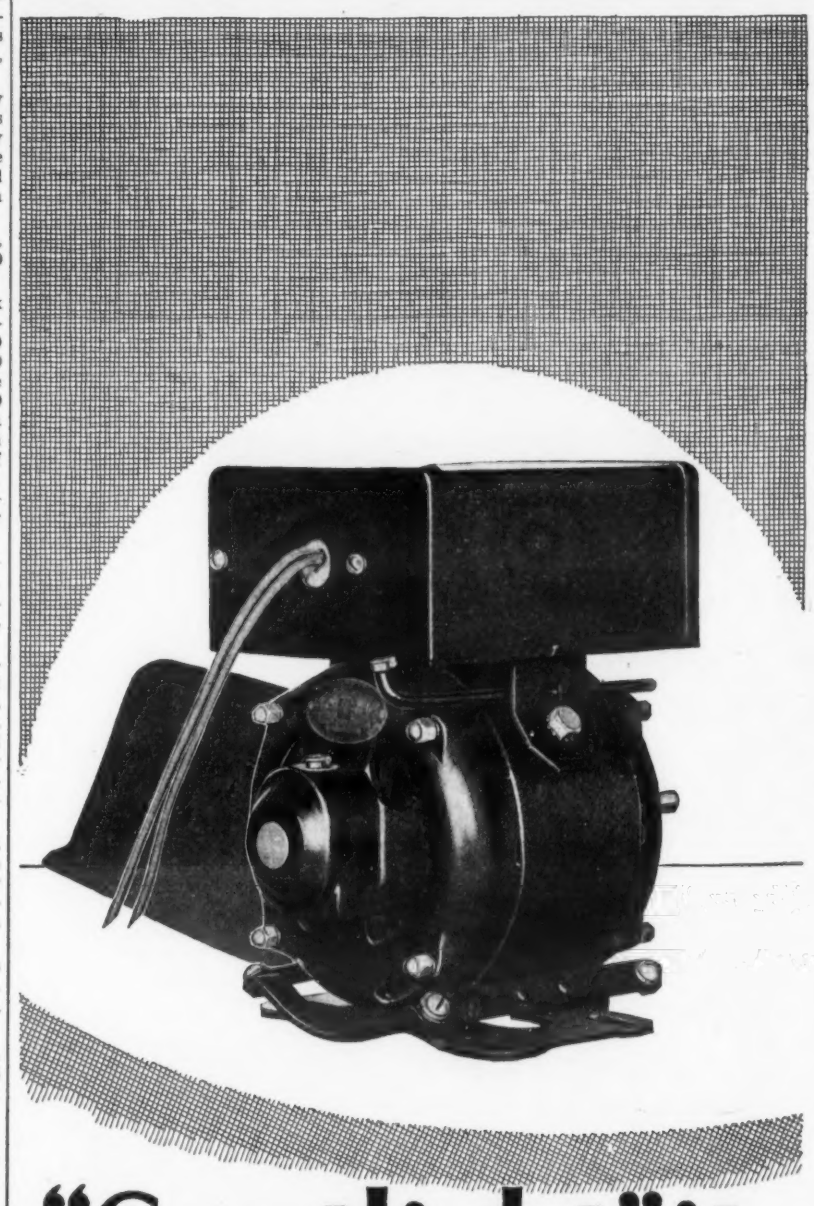
BALTIMORE—Ten Frigidaire water coolers are being installed in the district stations of the Baltimore police department in 1932.

The water coolers were purchased by Major General Charles D. Gaither, commissioner of police, from the Lloyd E. Mitchell Co., Baltimore, Frigidaire dealer.

ATWATER KENT ENGINEER JOINS SYNTHANE

OAKS, Pa.—S. W. Place, formerly with the Atwater Kent design laboratories, is now connected with the research department of Synthane Corp., here, manufacturers of Synthane Laminated Bakelite, sheets, rods, tubes, fabricated parts and stabilized gears.

G-E TYPE KC



"Spotlight" it NOW!

Now . . . long before the curtain goes up on your 1932 sales program . . . is the time to throw the spotlight of your attention on the Type KC motor.

It's "care-free"... simple in construction ... long-lived, reliable, quiet.

Investigate . . . then, specify the Type KC "care-free" motor for your 1932 model.

GENERAL ELECTRIC 210-159

ENGINEERING SECTION ELECTRIC REFRIGERATION NEWS

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Commercial Sizes

INCREASED attention to the market for commercial refrigeration on the part of small unit manufacturers is manifest in the addition of larger condensing units to several 1932 lines. Several machines using sulphur dioxide or methyl chloride have just been introduced which produce ice melting effects greater than a ton per day.

Installations of a size which formerly required two or more condensing units can now be made by these manufacturers with only one compressor. One of these new one-ton refrigerating machines will now serve a system which previously would have needed two one-half ton machines.

More Economical

Economies will be effected both in original cost of equipment, and in the simplification of installations, designers of the larger machines claim, in addition to reduced costs of operation of one large machine over two or three smaller sizes.

The design and manufacture of three- and four-cylinder compressors in the one-ton class involves technical considerations not regularly encountered by manufacturers of domestic systems. Accordingly, these machines were tested in field operation for several months before being offered through regular outlets. Now they have been introduced with the belief that they will perform properly.

Larger Cooling Units, Also

Along with the larger condensing units have been announced larger cooling coils which enable the installer to employ one evaporator where two or more were formerly used. Similar economies are expected for the larger coils; reduced purchase and installation costs, and high efficiencies.

Useful in Air Conditioning

Air conditioning is one of the developments which encouraged the design of the larger equipment, because air conditioning requires refrigeration beyond the capacity of fractional horsepower machines. A one-ton machine will handle room cooling installations as large as 10,000 cu. ft. of air, the engineers report.

Other installations which can now be served by just one refrigerating machine include large apartment houses, grocery stores, complete meat markets, restaurants, multiple water cooling systems, fairly large dairies, and ice cream hardening and manufacturing equipment.

Television

SUBSTANTIAL progress in the science of transmitting moving pictures by radio waves was evident at the Radio and Electrical Show at Chicago last week where several manufacturers of television equipment had set up demonstration apparatus.

Probably the most significant exhibition was produced on a 10-ft. square screen high up in Chicago's Coliseum where a performer's face was thrown with the clarity approximating that of pre-war movies. The flickering and occasional appearance of horizontal lines was somewhat disturbing, but the features of the face were easily recognized and the changing expressions of the performer reproduced with surprising accuracy.

Television Theatre

In an adjoining room was erected a "television theatre" in which regular demonstrations were made throughout the day on a screen about a foot and a half square. Here the definition of features was much finer, approaching the clarity of present-day movies. The voice transmission in both demonstrations was comparable to that of modern radio sets.

Compared with the hazy images produced a year ago, this year's demonstrations were encouraging. Of course, the transmitting equipment was located in the same building as the receiving equipment, and both were operated by trained engineers connected with television developments so the best results were probably obtained with the apparatus.

Something to Aim at

The high development of cinematography for the motion picture screen has induced the public to expect a degree of perfection which television still hasn't reached. But if the same measure of advancement, seen by 1931, is made each year, television is slated to become an important industry.

On Our Bookshelves

"HANDBOOK OF BUSINESS ADMINISTRATION"

Editor: W. J. Donald. Publisher: McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York City. Number of pages: 1752. Price: $7. Date of publication: 1931.

COMPREHENSIVE treatment of modern business methods as they have been developed in the business organizations of the 129 contributors to this new compendium on management, is presented as a work of the American Management Association.

W. J. Donald, editor-in-chief of the new book, also managing director of the American Management Association, has drawn from official publications of his association for source material, augmenting it by articles written by business executives and experts especially for inclusion in the handbook.

One of the pressing problems of management today grows out of the extreme specialization in executive duties which, during the last 10 or 15 years, has somewhat impaired the opportunity for that well-rounded experience which prepares an executive for promotion into general managerial positions, Mr. Donald observes in the preface. He believes that this book will meet, to some extent, the need for this education by providing in convenient form an exposition of procedures of managerial policy and technic.

The volume is addressed to four major groups: 1. Executives of general managerial rank who want a source of information which will help them to determine the relative efficiency of their own functional departments; 2. Major functional executives who are similarly anxious to maintain a perspective on progress in various sectors of their specialized fields; 3. Business executives specializing in one particular phase of a commercial operation who desire information on their own special field; and 4. Specialized executives who need a broader picture of a business operation as a means for developing their own abilities for promotional opportunities.

As impressive as the authoritative names and affiliations of the writers in the book, is the wide scope of business and industrial subjects treated in detail.

Six sections are presented in the book, one on each of the following major topics: marketing, financial management, production management, office management, personnel management, and general management.

In the first section attention is given to market research, advertising, price making, the sales force, marketing cost control, retailing, and exports.

The financial section offers articles on financial planning and control, incorporation, corporate financing, short-term borrowing, consolidations, depreciation, and insurance.

The production chapters treat organization, plant layout, machinery, research, design, production control, motion study, incentives and wage payments, quality, inspection, purchasing and storekeeping.

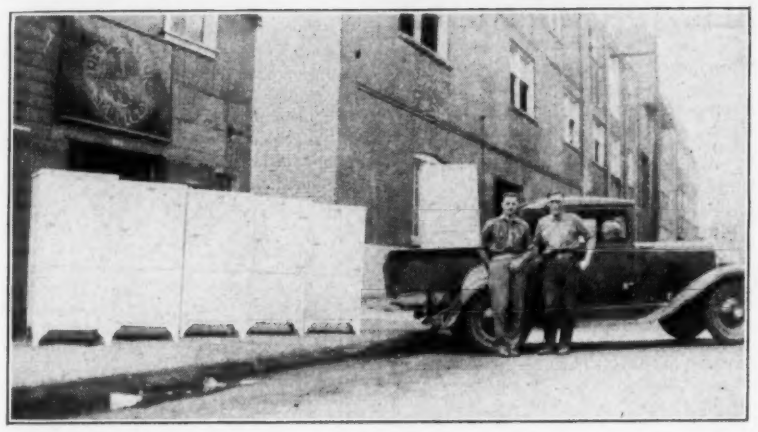
Under office management, chapters deal with that subject first in a general way, then physical factors, personnel, salary administration and promotion, measurement of output, the design and use of form, office planning and control, and branch office management.

The personnel section discusses organization maintenance of the working force, job analysis, compensation and incentives, training, meeting the hazards of the worker, employes' financial plans, collective bargaining, employe representation, and U. S. labor laws.

Under "General Management," the last section, the following chapters appear: the technic of management, management control, use of research and specialists, executive personnel problems, executive leadership, technic of group action, and public relations.

The handbook represents careful compilation on the part of its editor, intelligent treatment by its writers, and should be valuable to the studious executive who wants to know modern, approved business methods used in outside organizations.

Installing Apartment House Jobs



Harold Darragh (left), prominent Toronto hockey player and service man, with his partner, Cliff Pinke (right), in the D. & P. Refrigeration Co., which operates in Toronto, Canada.

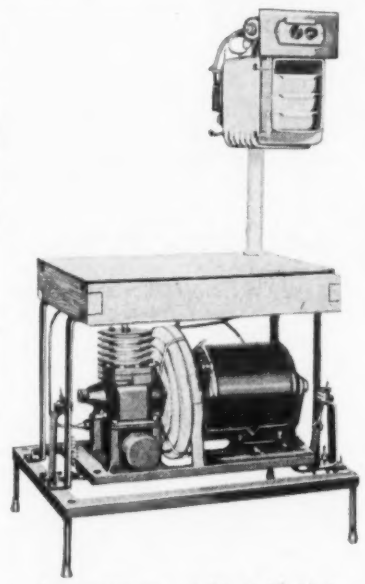
M & E COMPRESSOR BASE SUPPORTS COOLING UNIT

PHILADELPHIA—New 1932 refrigerating units of the Merchant & Evans Co. designed for installation in household electric refrigerators are being built with the evaporator mounted on a rigid support extending up from the condensing unit, according to M. P. Stoney, refrigeration manager.

"The evaporator and 'Gyroscopic' compression unit are built as one rigid assembly which rests on the floor, this assembly supporting the cabinet proper," he explains. "The latter is placed over the refrigerating apparatus to complete the refrigerator assembly."

The cabinet for this type of unit can be manufactured from one piece of steel, he claims, without any seams and without any compressor compartment door.

"In servicing, the complete unit can be removed by taking out four bolts,



Arrangement of M & E Unit

and a new unit substituted, or, if desired, the machine can be serviced in the conventional manner from the opening in the back. Should the cabinet be damaged, a new one can be placed over the machine in a short time, without shutting off the motor or losing ice," he maintains.

The evaporator is of the direct expansion type with a superheating coil in the rear, he announced. The compressor is of the one-cylinder type with a standard 1/6-hp. motor direct connected, but adjustably mounted on an eccentric bearing on its center of gravity for vertical adjustment. The eccentric is housed in a slotted aperture for alignment.

The chief feature of the drive is the motor mounting which provides for rough alignment as soon as the motor starts, and more accurate alignment when it attains its speed by the gyroscopic action of the motor.

The compressor is suitable for water and beverage cooling, Mr. Stoney points out, being built to fit in a space as small as 11½ in. wide, 11½ in. deep, and 12 in. high.

BIG REFRIGERATED TRUCK ON 860-MILE SCHEDULE

LOS ANGELES—A two-ton, 165-in. wheelbase heavy duty refrigerated truck manufactured by Dodge Brothers Corp., is being operated between Los Angeles and Cortez, Colo., a distance of approximately 860 miles one way, by W. R. Richardson and Simm Richmond of Cortez.

The truck is equipped with a 24-ft. semi-trailer, the body being refrigerated by solid carbon dioxide. It transports butter, eggs, poultry and other perishables to the West Coast and returns to Cortez loaded with citrus fruits. The roomy cab has sleeping accommodations for the relief driver.

G. E. PATENT GRANTED ON METHYL FORMATE

In view of recent interest in new refrigerants, and because A. R. Stevenson, Jr., F. H. Faust, and E. W. Roessler of General Electric Co. will present a paper on the use of the reversed refrigeration cycle in heating and cooling homes before the American Society of Refrigerating Engineers this week in Cleveland, General Electric's patent on methyl formate is reproduced in full below.—Editor's note.

Oct. 20, 1931
No. 1,828,559 granted by U. S. Patent Office.
Christian Dantsizen, of Schenectady, N. Y., assignor to General Electric Co., a Corporation of New York.

REFRIGERANT

No drawing. Application filed May 21, 1929. Serial No. 364,942.

My invention relates to a new and improved refrigerant.

I have discovered that methyl formate, ($H.COOCH_3$), as a refrigerant is superior in some refrigeration systems to the common refrigerants now in use. It possesses characteristics and properties which render it very valuable for use as a refrigerating medium. This organic substance may be used as a refrigerant without admixture with any other substance.

Methyl formate has a normal boiling point of about 33° C. Its vapor pressure at normal temperatures is thus low enough so that it can be transported in cork stoppered, glass bottles, and yet high enough at, say, −10° C to permit its use in a refrigerating machine.

This property makes it admirably suited for use with certain types of low pressure refrigerators, such as the rotary compressor types. It is heavier than, and practically not miscible with the lubricating oils ordinarily used in refrigerating machines; that is, it is not miscible in all proportions with lubricating oils.

Both of these properties are highly desirable in refrigeration. Since it is substantially not miscible with oil, there is no danger of materially thinning the lubricating oils, as is the case with organic halides which are used as refrigerants. This is a decided advantage.

It is non-corrosive and, hence, does not attack the metal parts with which it comes in contact. It is relatively non-poisonous and therefore suited for use in domestic refrigerating machines.

In use, methyl formate may be employed in a system of refrigeration, as in the compressor type, passing through the cycle of first being compressed by the compressor, then to a condenser, from there to an expansion chamber, or evaporator, and finally returning to the compressor to complete the cycle.

Since methyl formate has a low vapor pressure at high temperatures and is relatively non-poisonous, it is well adapted for use in heating systems employing the refrigeration cycle.

In such a system the heat may be absorbed from outside of the building by evaporation of the methyl formate at low pressure and temperature, and liberated by being compressed and condensed in radiators within the building to be heated.

What I claim as new and desire to secure by Letters Patent of the United States, is:

A refrigerating system comprising a compressor, said system having oil therein for lubricating the parts of said compressor, a condenser, an evaporator, and a refrigerant circulated through the system by said compressor and coming in contact with said lubricating oil, said refrigerant consisting of methyl formate without admixture with ether or any other substance which would cause it to become miscible to any substantial extent with said lubricating oil.

In witness whereof, I have hereunto set my hand this 20th day of May, 1929.

CHRISTIAN DANTSIZEN.

During the Lunch Hour

Pretty office misses gather at a Westinghouse CMT-5 for a cold drink.

BRUNNER ANNOUNCES HOUSEHOLD MODELS

UTICA, N. Y.—Five cabinet models constitute the first line of Brunner electric refrigerators, manufactured by the Brunner Mfg. Co., makers of air compressors, paint spray equipment, and car washers. Prices run from $180 to $410 list, f.o.b. factory.

The models range in size from 4.10-cu. ft. capacity to 8.34-cu. ft. capacity. Brunner refrigeration compressors, which have been on the market several months, are used in the complete Brunner refrigerator.

All of the models have a porcelain interior, and the three larger models have a porcelain exterior, the two smaller ones being finished in lacquer.

Balsam Wool fibre insulation is used in all models. Hardware is finished in rust-proof chromium plate. All cabinets are fitted with legs.

Model A-4 has a net food storage capacity of 4.10 cu. ft., a shelf area of 7½ sq. ft., and two ice cube trays freezing 30 cubes or 4 lbs. of ice at one freezing. It stands 50½ in. high, is 24½ in. wide, and is 21¾ in. deep.

Model A-5 has a net food storage capacity of 5.14 cu. ft., a shelf area of 8¼ sq. ft., and two ice cube trays freezing 56 cubes or 4½ lbs. of ice at one freezing. It stands 58¾ in. high, is 27¾ in. wide, and 24 in. deep.

Model A-7 has a net food storage capacity of 7 cu. ft., a shelf area of 10¼ sq. ft., and three ice cube trays freezing 84 cubes or 6½ lbs. at one freezing. It stands 61¾ in. high, is 30 in. wide, and 26½ in. deep.

Model D-6 has a net food storage capacity of 6.5 cu. ft., a shelf area of 10 sq. ft., and three ice cube trays freezing 84 cubes or 6½ lbs. at one freezing. It is 58¾ in. high, 35 in. wide, and 28½ in. deep.

Model D-8 has a net food storage capacity of 8.34 cu. ft., a shelf area of 12¼ sq. ft., and has five ice cube trays freezing 140 cubes or 11 lbs. at one freezing. It stands 66¾ in. high, is 35 in. wide, and 28½ in. deep.

Census Surveying Manufactures Of 1931

WASHINGTON, D. C.—The Census Bureau is now mailing its 1931 Census of Manufactures questionnaires to all manufacturers. The questionnaire is considerably smaller than that used for the 1929 canvass, due to the fact that the 1931 census is one of the regular biennial series, and does not fall in with the decennial series.

Information given in the questionnaires will relate either to the calendar year 1931 or to a fiscal year beginning April 1, 1931, and ending March 31, 1932, according to the bureau's plans.

Four major items are covered in the questionnaires, namely: wage earners employed, by months; wages paid; cost of materials, fuel, and purchased electric energy; and products by quantity and value. For a few of the industries added inquiries refer to materials consumed and machinery or equipment in use.

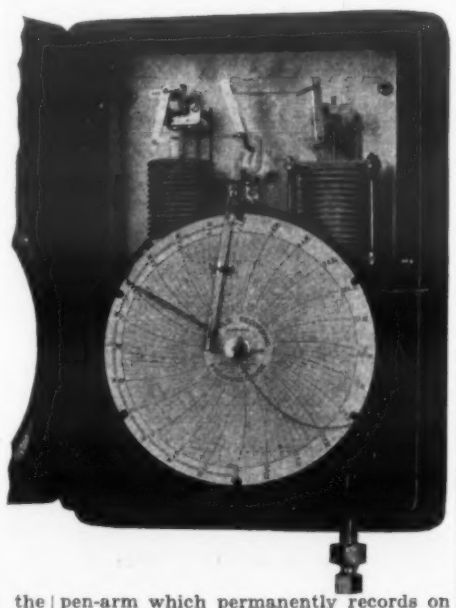
The term "wage earners" is used to designate mechanics and other manual workers, watchmen, firemen, engineers, etc. No data on the number of salaried officers and employes will be compiled in the present census.

Bristol Develops New Recording Pressure Gauge

WATERBURY, Conn.—A new direct reading, single pen absolute pressure gauge of the recording type, has just been developed by The Bristol Co.

This instrument eliminates the necessity for applying barometric corrections to vacuum readings.

This instrument can be furnished for ranges as low as from 0 to 50 millimeters head of mercury pressure, absolute or equivalent.



The new gauge is designed for use in connection with operation of turbo condensers, vacuum pans in sugar and salt drying, vacuum oil stills, vacuum packing and sealing of foods, i. e., coffee, powdered milk, and other similar items in cans, vacuum retorts in chemical plants, in the manufacture of gaseous type vacuum tubes, and other places where high vacuums are employed.

The actuating mechanism consists of two sensitive diaphragm elements. One is connected to the vacuum line, and the other is directly affected by barometric pressure variations. The resulting movements of these elements are transmitted by a differential transmitting linkage to a single pen-arm which permanently records on a suitable chart.

The case for housing the instrument is all metal. It is available for surface or flush mounting, according to officials of The Bristol Co.

CROSLEY, FADA SHOW NEW REFRIGERATORS

CHICAGO—Two prominent manufacturers of radios made first public showings of their new electric refrigerators during the Radio-Electrical Show, here, last week.

Along with its radio line, the Crosley Radio Corp. of Cincinnati exhibited its two new refrigerators in the Crosley booth at the Chicago Coliseum, while F. A. D. Andrea, Inc. of Long Island City held a private showing of the Fada refrigerator in the Stevens Hotel.

Two models comprise the Crosley line, a 4½- and a 5½-cu. ft., selling at $99.50 and $139.50, f.o.b. Cincinnati.

Fada refrigerators are offered in six models, three different sizes each in lacquer or porcelain exteriors. Fada 540 has 4 cu. ft., 650 has 5 cu. ft., and 760 has 6 cu. ft. of net storage space; these are priced at $179.50, $210, and $240 f.o.b. the Long Island City factory. Fada models 541, 651, and 761 have porcelain exteriors offering 4, 5, and 6 cu. ft. of net storage capacity, and sell for $194.50 $230, and $265 at the factory. Fada refrigerators are covered by a three-year guarantee.

The Crosley refrigerators are insulated with Dry-Zero, 3 in. in the 4½-cu. ft. cabinet, and 3½ in. in the 5½-cu. ft. box. Cabinets are finished in white lacquer, interiors in porcelain.

The 1/10-hp. Delco motor, single-cylinder vertical compressor, and finned tubing condenser are mounted on a metal base suspended on springs in a machine compartment above the food chamber. The refrigerant is sulphur dioxide. The unit may be serviced without removal, according to C. Pitsenbarger, refrigerating engineer.

Ranco controls and automatic cut-out are provided, with the temperature selector mounted on the evaporator shield. Cooling is accomplished by expansion of the refrigerant through a length of capillary tubing.

Chromium plated brass hardware has been adopted. Shelves are of flat wire.

Specifications of the Crosley refrigerators follow:

Model C-12, 4½ cu. ft. capacity; 9 sq. ft. shelf area; three ice cube trays; 63 ice cubes; 57¾ in. high; 25¾ in. wide; and 20¾ in. deep.

Model D-12-A, 5½ cu. ft. capacity; 10¼ sq. ft. of shelf area; five ice cube trays; 105 ice cubes; 67½ in. high; 32 in. wide; and 24½ in. deep.

FADA SPECIFICATIONS

The three Fada sizes are rated at 4, 5, and 6 cu. ft. of net food storage capacity, or 5, 6, and 7 cu. ft. gross capacity. The small size has 2 in. of Dry-Zero insulation, the middle one has 2½ in., and the large size has 3 in. of the same insulant. Controls are of the Ranco make and are mounted on the evaporator. Cabinets are by Seeger.

Expansion of the methyl chloride is effected through capillary tubing. The finned copper tubing condenser is of the horseshoe type surrounding the fan which extends between the General Electric 1/6-hp. capacitor motor and the reciprocating compressor.

The porcelain models have a narrow dark blue border around the top and bottom of the cabinet.

Further specifications follow:

Model No.	Shelf Area Sq. Ft.	Net Capacity Sq. Ft.	Ice Cubes	Height In.	Width In.	Depth In.
540,541	8.12	4	56	54	24½	20¾
650,651	10.21	5	84	57¼	26¼	22¼
760,761	12.11	6	84	60	30½	23¼

NEW SERVICE SHOP OPENED IN INDEPENDENCE, KAN.

INDEPENDENCE, Kan.—The Electric Shop, refrigerator, radio and appliance service concern, has been opened in the Kansas Gas & Electric Co. building here by W. J. Nickel, Art Marion, and Clay Millican.

Mr. Nickel was employed by the Kansas Gas & Electric Co. for the last nine years. The store room was leased from the public utility company.

BALTIMORE POLICE TO USE FRIGIDAIRE COOLERS

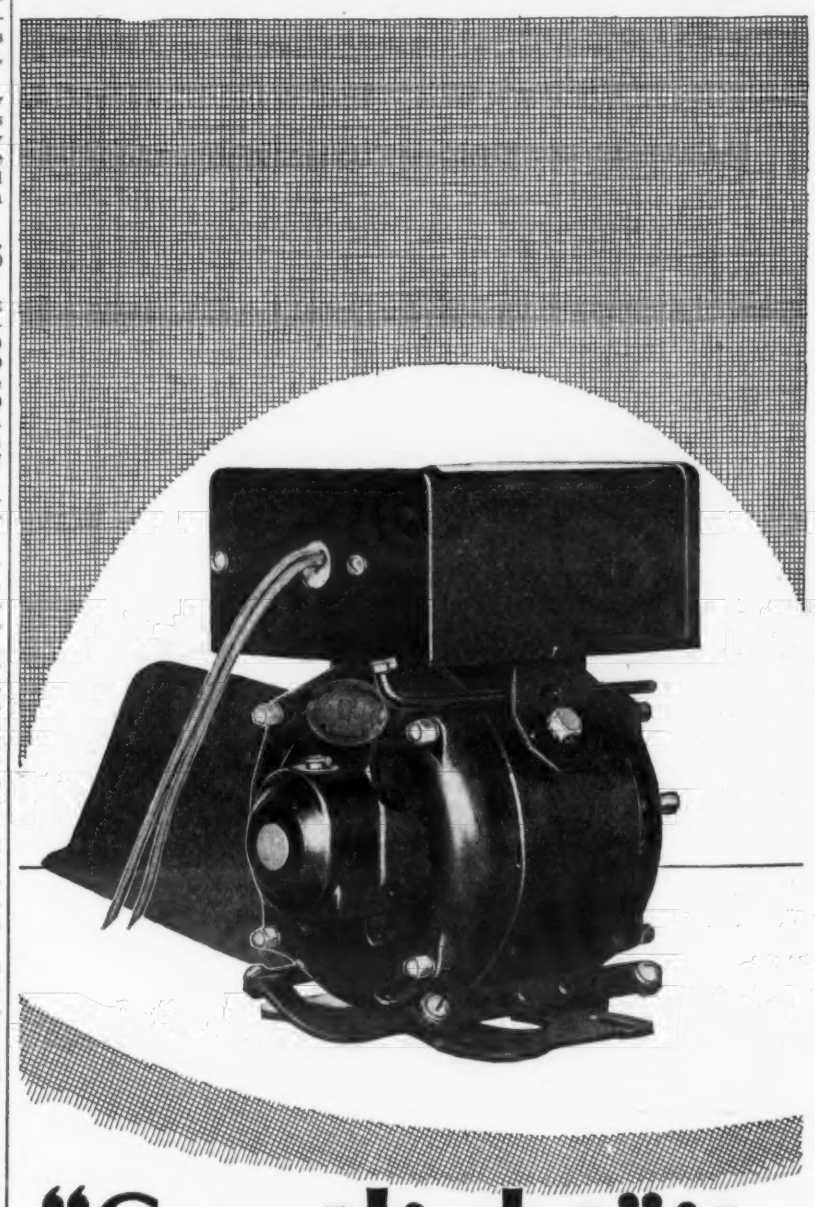
BALTIMORE—Ten Frigidaire water coolers are being installed in the district stations of the Baltimore police department in 1932.

The water coolers were purchased by Major General Charles D. Gaither, commissioner of police, from the Lloyd E. Mitchell Co., Baltimore, Frigidaire dealer.

ATWATER KENT ENGINEER JOINS SYNTHANE

OAKS, Pa.—S. W. Place, formerly with the Atwater Kent design laboratories, is now connected with the research department of Synthane Corp., here, manufacturers of Synthane Laminated Bakelite, sheets, rods, tubes, fabricated parts and stabilized gears.

G-E TYPE KC



"Spotlight" it NOW!

Now . . . long before the curtain goes up on your 1932 sales program . . . is the time to throw the spotlight of your attention on the Type KC motor.

It's "care-free"... simple in construction ... long-lived, reliable, quiet.

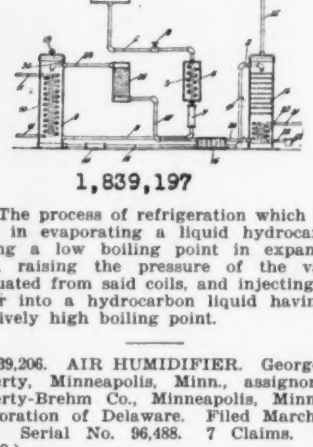
Investigate . . . then, specify the Type KC "care-free" motor for your 1932 model.

GENERAL ELECTRIC 210-159

REVIEW OF LATEST PATENTS GRANTED

ISSUED JANUARY 5

1,839,197. PROCESS OF REFRIGERATION. Samuel C. Carney, Tulsa, Okla., assignor to Shell Petroleum Corp., a Corporation of Virginia. Filed Sept. 19, 1925. Serial No. 57,323. 5 Claims. (Cl. 62—179.)



1,839,197

1. The process of refrigeration which consists in evaporating a liquid hydrocarbon having a low boiling point in expansion coils, raising the pressure of the vapor evacuated from said coils, and injecting the vapor into a hydrocarbon liquid having a relatively high boiling point.

1,839,206. AIR HUMIDIFIER. George D. Doherty, Minneapolis, Minn., assignor to Doherty-Brehm Co., Minneapolis, Minn., a Corporation of Delaware. Filed March 22, 1926. Serial No. 96,488. 7 Claims. (Cl. 261—9.)

1. An air humidifying and air heating device comprising means for conducting air for the purpose of heating it, means adapted to heat said air, controllable means adapted to mix such heated air with fresh air, a rotatable cylindrical casing of mesh fabric, means for wetting said mesh fabric to impart humidity to said mixture of air, and suction means in communication with said cylindrical casing whereby said mixture of air is sucked axially through said wetted mesh fabric and blown from said apparatus.

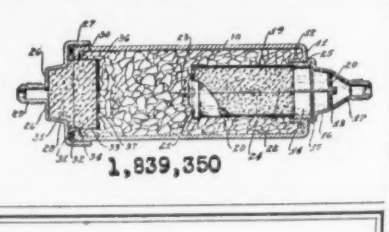
1,839,234. HUMIDIFIER. Charles J. Lehn, Oak Park, Ill. Filed Feb. 25, 1929. Serial No. 342,418. 9 Claims. (Cl. 261—12.)

1. A humidifier comprising a water cistern having an upwardly extending opening, a heater mounted in said cistern in position to be immersed in the water therein and a casing encircling said cistern and spaced from the walls thereof to provide a peripheral air channel, spacing means to secure the casing in spaced relationship with respect to the walls of the cistern, said casing being opened at its lower end and extending upwardly of the upper end of the cistern, the upper portions of the casing being formed to provide a restricted opening above the cistern, the area of said restricted opening being not less than the area of said air channel and a heater arranged in said air channel whereby to cause ascending air currents in said channel.

1,839,278. REFRIGERATING APPARATUS. Lucien L. Torrey, Los Angeles, Calif. Filed Sept. 24, 1924. Serial No. 739,579. 21 Claims. (Cl. 62—115.)

1. A refrigerating unit comprising a condensing tank containing oil, a compressor in said tank, an oil pump in said tank below the level of the oil, a motor in said tank above the level of the oil, said compressor and said oil pump being driven by the motor, and conduits connected with said oil pump for supplying oil to the bearings of the said motor.

1,839,350. DEHYDRATOR. Franklin G. Slagel, Buffalo, N. Y., assignor to Fedders Mfg. Co., Inc., Buffalo, N. Y., a Corporation of New York. Filed July 29, 1929. Serial No. 381,977. 5 Claims. (Cl. 183—4.)



1,839,350

1. In a purifier for a refrigerating system, a calcium chloride container, a pair of means for connecting the container in the refrigerant circuit of the system, and refrigerant filter means in each of said connecting means.

1,839,618. HUMIDIFIER. George O. Toepfer, Milwaukee, Wis. Filed March 20, 1930. Serial No. 437,355. 4 Claims. (Cl. 261—15.)

1. A humidifier for use with a heating plant having a smoke pipe and comprising a casing having a transverse internal partition dividing the casing into an air heating chamber and a vapor generating chamber, said chambers being spaced longitudinally of the casing, said partition terminating short of the top of the casing to provide for flow of the heated air from the air heating chamber into the vapor generating chamber, the ends of the casing and the partition having openings through which the smoke pipe extends, an air inlet into the air heating chamber, means for creating a vapor in the vapor generating chamber and comprising spray nozzles for directing sprays against the portion of the smoke pipe in the vapor generating chamber, and a distributing system connected to the vapor generating chamber.

1,839,651. SHARP FREEZING UNIT. Lloyd G. Copeman, Flint, Mich., assignor to Copeman Laboratories Co., Flint, Mich., a Corporation of Michigan. Filed Sept. 12, 1928. Serial No. 305,404. 5 Claims. (Cl. 62—95.)

1,839,651

1. A sharp freezing unit, comprising a mass of plastically applied stone extending substantially the height of the unit, a plurality of sharp freezing chambers formed in the stone and extending inwardly, a relatively large chamber formed in said stone below the sharp freezing chambers and adapted to receive a container of a capacity equal to all of said sharp freezing chambers, and refrigerant conducting means embedded in the stone in heat-conducting relation with said sharp freezing chambers and at least part of said large chamber.

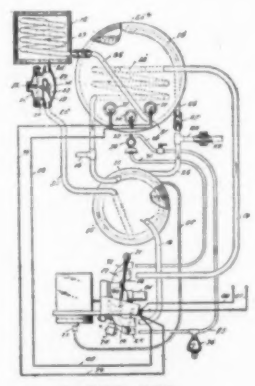
1,839,660. PROCESS FOR MAKING WATERPROOF INSULATING BODIES. George H. Ellis, St. Paul, Minn., assignor to The Insulite Co., Minneapolis, Minn., a Corporation of Minnesota. Filed Aug. 10, 1929. Serial No. 385,081. 9 Claims. (Cl. 92—21.)

1. A process for producing a stiff waterproof, vermin-proof sheet, which consists in forming from pulped cellulosic material a soft porous air-filled sheet, drying the sheet by the application of heat, applying sulphur, and then applying pressure, while applying sufficient heat to make and to maintain a fluid condition of the sulphur, without scorching the product.

1,839,689. REFRIGERATING SYSTEM. Carl E. L. Lipman, Beloit, Wis., assignor to Lipman Patents Corp., Chicago, Ill., a Corporation of Delaware. Filed Oct. 7, 1927. Serial No. 224,574. 2 Claims. (Cl. 62—116.)

1. The combination with a refrigerator cabinet provided with a storage chamber, of a removable refrigerating unit including a high pressure side, an expansion element and a support for the unit, said element being carried by the support whereby it is in communication with said chamber when the unit is in operative position, the cabinet being provided with a ventilating opening and a second opening through which the unit may be removed and a door for said latter opening, said support cooperating with the interior of the cabinet and said door when the same is closed to form a seal whereby the high side and said element are insulated from each other when the unit is in operative position, said door being further provided with an opening adapted to register with the high side of said unit when the same is in operative position for permitting the circulation of air.

1,839,939. REFRIGERATING APPARATUS. Leonard Kay Wright, Astoria, N. Y. Filed Jan. 26, 1927. Serial No. 163,661. 11 Claims. (Cl. 62—5.)



1,839,939

5. A refrigerating apparatus comprising an absorber-generator, a condenser-receiver, means responsive to the pressure in the condenser-receiver for alternating heating and cooling the absorber-generator, connections between the generator and the receiver, refrigerating coils, a connection between the refrigerating coils and the generator, connections between the receiver and the refrigerating coils, an expansion valve in said last mentioned connection, the connections from the refrigerating coils to the generator and receiver extending to the bottom of each respectively.

1,840,045. PUMP FOR REFRIGERATING APPARATUS. Alex A. McCormack, Dayton Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed May 30, 1930. Serial No. 457,566. 4 Claims. (Cl. 230—206.)

1. In a compressing unit, a compressor comprising a cylinder, a reciprocating piston in said cylinder, said piston dividing said cylinder into a pressure portion and a suction portion, said piston having a normally open passage connecting said suction and pressure portions and means adapted to fluid-seal said passage against the passage of compressed fluid from the pressure portion to the suction portion when the compressor is driven at a pre-determined speed.

1,840,074. REFRIGERATING APPARATUS. De Witt H. Wyatt, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed July 30, 1928. Serial No. 296,260. 16 Claims. (Cl. 62—141.)

1. A water cooling device comprising a vertical water receptacle having an outlet connection below the top of said receptacle, means for controlling flow of water from said outlet, a horizontal refrigerant boiler adjacent said receptacle and an extension from said boiler surrounding vertical parts of said receptacle, said extension having a refrigerant liquid and gas space in common with said boiler.

1,840,163. REFRIGERATOR DOOR LATCH. William Matis Hersch and Christopher John Anderson, Streator, Ill., assignors to Streator Cold Storage Door Co., Streator, Ill. Filed Jan. 14, 1928. Serial No. 246,833. 2 Claims. (Cl. 292—164.)

1. In a latch mechanism, a housing in the form of a casing, a slidable bolt movable in said casing, a striking bracket for engagement by said slidable bolt, a spring mounted in the casing and urging said slidable bolt in engagement with said striking bracket, the spring engaging one end of the casing, the slidable bolt having an intermediate enlargement forming a shoulder for engagement with opposite end of the spring and a slot in said enlargement, the front of the casing having an opening, a handle pivoted at one end in the opening on a vertical axis and having a hand grip at its free end, said pivoted end of the handle being hollowed out at the back with divergent faces, a toggle pivoted between the top and bottom walls of said hollowed out portion loosely for movement independently of the handle in the retracting direction by engagement with the face of the slot in the slidable bolt facing opposite the striking bracket when the latter is acting to retract the slidable bolt upon closing of the door without movement of the handle, said toggle engaging the opposite face of the hollowed out portion when the handle is actuated to retract the bolt by engagement of the toggle with the face of the slot disposed toward the striking bracket, the casing having a recessed portion at the forward end receiving the slidable bolt, and a retaining plate removably secured over said recess.

ISSUED JANUARY 12

1,840,252. FASTENER FOR COLD STORAGE AND REFRIGERATOR DOORS. Emanual J. Reinhart, Chester, Pa. Filed July 14, 1930. Serial No. 467,861. 3 Claims. (Cl. 292—169.)

1. In a door fastener, a spring pressed bolt, guides for the bolt, a sleeve on one guide and receiving the bolt, a nut adjustable on the sleeve, a collar fixed to the bolt spaced from the nut, a tensioning spring between the nut and collar, and means on the guide having the sleeve for locking the bolt against movement when shifted to locking position.

1,840,375. REFRIGERATING DEVICE. Robert O. White, Los Angeles, Calif. Filed Nov. 2, 1929. Serial No. 404,450. 13 Claims. (Cl. 62—141.)

1. A refrigerating assembly comprising a vaporizing chamber, a fluid cooling chamber disposed alongside of said vaporizing chamber with a heat transfer section of wall constituting both a portion of the wall of the vaporizing and fluid cooling chambers, and an inlet for fluid within said fluid cooling chamber having a multiplicity of openings disposed at different distances from the heat transfer section of wall.

1,840,475. REFRIGERATOR DISPLAY COUNTER. Raymond H. Starr, North Kansas City, Mo. Filed March 15, 1930. Serial No. 436,024. 12 Claims. (Cl. 62—89.6.)

1. In a refrigerator display counter in-

(*Continued on Page 7, Column 1*)

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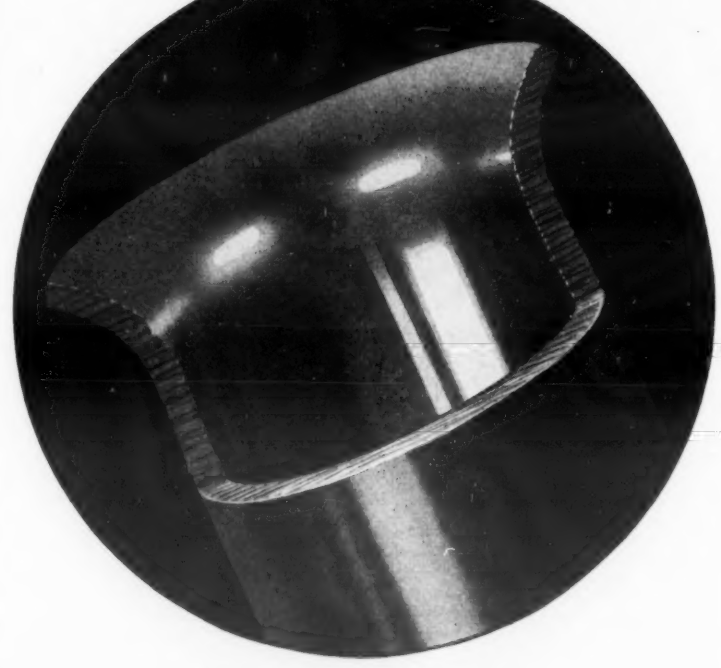

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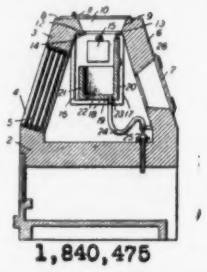
IN FIELD OF ELECTRIC REFRIGERATION

(*Continued from Page 6, Column 5*)

cluding a case and a refrigerating coil located in the case, a pan vertically movably



1,840,475

mounted in the case below the coil and having portions engageable with the case to isolate the coil from the interior of the case.

1,840,510. HEAT INTERCHANGER. George Henry Kelley, New Haven, Conn., assignor to Winchester Repeating Arms Co., New Haven, Conn., a Corporation of Delaware. Filed March 29, 1930. Serial No. 440,015. 2 Claims. (Cl. 257—236.)

1. A heat interchanger comprising a matrix cylinder having an inlet opening and an outlet opening, the ends of said matrix cylinder being reduced in size and being squared in cross section, a nest of thin walled tubes arranged in said matrix cylinder, said tubes being provided with enlarged ends adapted to fit snugly in the ends of said matrix cylinder, and end chamber heads secured to said matrix cylinder, each of said end chamber heads being provided with an opening.

1,840,565. METHOD OF AND APPARATUS FOR CONTROLLING TEMPERATURE AND HUMIDITY. Alfred C. Buensod, New York, N. Y., assignor, by mesne assignments to Auditorium Ventilating Corp., Jersey City, N. J., a Corporation of New Jersey. Filed Aug. 2, 1927. Serial No. 210,092. 30 Claims. (Cl. 236—44.)

1. In a system for controlling atmospheric conditions in an enclosure and in which air withdrawn from the enclosure is recirculated and returned to the enclosure, an air conditioner for conditioning air for delivery with said recirculated air to the enclosure, said air conditioner having provision for admitting thereto for conditioning either or both air withdrawn from the enclosure and outside air, and means operating automatically and in relation to the atmospheric conditions in the enclosure for selectively varying the volume of the said withdrawn and outside air which is admitted to the conditioner and is conditioned and delivered with said recirculating air to the enclosure.

1,840,612. REFRIGERATOR. John C. Staton, Atlanta, Ga., assignor to The Coca-Cola Co., Atlanta, Ga., a Corporation of Delaware. Filed Jan. 9, 1929. Serial No. 331,168. 2 Claims. (Cl. 220—9.)

1. A refrigerator comprising, in combination, an insulating container, angle iron legs each embracing a corner of said container and spaced outwardly therefrom, angle frame members each having a flange underlying a corner of said container and a vertical flange spaced from the lower edge of a side thereof, removable plates inserted in the spaces between said legs and vertical flanges and the sides of said container, an open frame supported by the upper ends of said legs and having outer flanges overlapping said removable plates and a heat insulating cover resting upon said frame serving as a closure for said container.

1,840,613. COOLING COIL. John Curtis Staton, Atlanta, Ga., assignor to The Coca-Cola Co., Atlanta, Ga., a Corporation of Delaware. Filed March 19, 1930. Serial No. 437,183. 3 Claims. (Cl. 257—242.)

1. A cooling coil comprising, in combination, a liquid tube extending about a plurality of sides of a rectangle and returning about said sides in a path parallel with and spaced inwardly from its first extension, a refrigerant tube parallel with and spaced vertically from said liquid tube, and plates having openings occupied by said tubes, said plates contacting with the walls of said tubes whereby to facilitate heat transfer between said tubes.

1,840,619. REFRIGERATING SYSTEM. Lloyd G. Copeman, Flint, Mich., assignor to Copeman Laboratories Co., Flint, Mich., a Corporation of Michigan. Filed March 27, 1931. Serial No. 525,786. 10 Claims. (Cl. 62—91.5.)

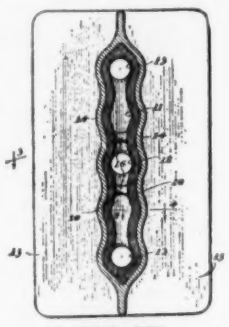
1. A refrigerating system, comprising a tank holding a relatively large supply of refrigerating medium, a container for receiving a charge of solid CO_2 positioned adjacent said tank and forming a part of the refrigerating unit, a body of brine constantly surrounding said CO_2 container, a conduit for conducting the evaporated CO_2 from said solid CO_2 container into said large body of brine to cause agitation thereof, and a mass of material surrounding said large body of brine and said brine around said CO_2 container, said material having relatively good holdover and conductive properties.

1,840,645. REFRIGERATOR TABLE. Nina Welles Tibbot, Minneapolis, Minn. Filed Dec. 22, 1926. Serial No. 156,350. 1 Claim. (Cl. 62—11.)

A refrigerating structure having a plane unobstructed top surface, a refrigerant condensing apparatus housed at one end of said structure, a refrigerating unit housed in the other end of said structure and connected to said condensing apparatus, insulated walls forming a chamber and containing said refrigerating unit at one side thereof, the other side of said chamber being arranged to receive articles to be refrigerated, and a door at said last mentioned end of said structure in one of said insulated walls affording access to said chamber.

1,840,651. HEAT TRANSFER UNIT. Edwin M. Bassler, Wausaw, Wis., assignor to D. J. Murray Mfg. Co., Wausaw, Wis., a corporation of Wisconsin. Filed Oct. 21, 1929. Serial No. 401,321. 2 Claims. (Cl. 257—150.)

2. A heat transfer unit comprising a hollow header of one metal having its opposite ends closed and there provided with outwardly projecting perforated and threaded bosses adapted to facilitate circulation connections therewith, said header being rela-



1,840,651

tively wide and thin and the opposite sides therefor being corrugated; and an outer jacket of another metal surrounding and closely associated with said header and provided with projecting fins.

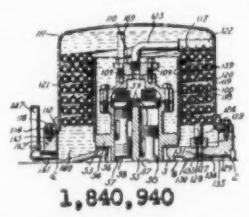
1,840,702. REFRIGERATING SYSTEM. Lloyd G. Copman, Flint, Mich., assignor to Copeman Laboratories Co., Flint, Mich., a Corporation of Michigan. Filed Nov. 20, 1930. Serial No. 496,845. 18 Claims. (Cl. 62—91.5.)

1. A refrigerating system, comprising a container for receiving a charge of solid CO_2, refrigerant circulating means positioned in direct heat conducting relation with said solid CO_2 said means extending to and forming a part of a cooling unit, means for controlling the escape of CO_2 gas from said container, and means for positively circulating the refrigerating medium in said circulating means.

1,840,738. FREEZER COUNTER. Worth H. Percival, Des Moines, Iowa, assignor to C. L. Percival & Co., Des Moines, Iowa. Filed July 21, 1930. Serial No. 469,361. 7 Claims. (Cl. 62—89.5.)

7. In a device of the kind described, a casing having in its upper part a display chamber and having in its lower part a brine holding compartment, a food receiving member in said compartment, a freezing coil in the display chamber, a door opening into the display chamber, and means below the freezing coil for supporting a defrosting pan.

1,840,940. REFRIGERATING UNIT. Walter L. Ecabert, Omaha, Nebr., assignor to Baker Ice Machine Co., Inc., Omaha, Nebr., a Corporation of Nebraska. Filed Oct. 13, 1927. Serial No. 225,915. 1 Claim. (Cl. 257—229.)



1,840,940

In apparatus of the character described, a coil comprising a plurality of tubes including inner and outer coiled tubes arranged in concentric convolutions spaced to form a helical passageway, adjacent ones of said tubes having adjacent edges sealingly connected to provide an impervious helical track, means including a shell mounted in said coil and sealingly connected with said inner tube to close the inner side of said passageway and form a chamber in said coil having a drain outlet, a shell surrounding said coil and sealingly connected with said outer tube to close the outer side of said passageway, said last named shell being extended to form a chamber above said coil communicating with said coil chamber and with said passageway, and means including extended portions of said shells forming an inlet to said passageway.

1,840,943. REFRIGERATING CABINET. John Edward Gloekler, Pittsburgh, Pa. Filed Aug. 1, 1930. Serial No. 472,331. 4 Claims. (Cl. 62—89.5.)

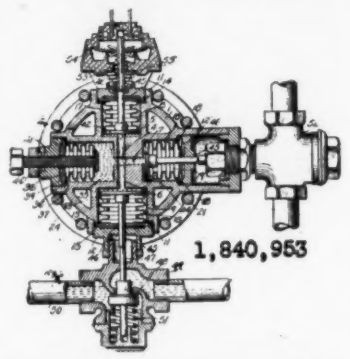
2. In combination with a refrigerating cabinet as described having a main forwardly and downwardly sloping bottom interior surface, enclosing walls, a rear refrigerating chamber, and a front communicating commodity chamber; a rear longitudinal supporting rail between said chambers near the top of the refrigerating chamber, a longitudinal supporting rail parallel therewith and located materially below the rear rail slightly above the forward bottom portion of the commodity chamber, and a supporting pan having a rear upwardly extending wall terminating in an edge slidably carried by said rear rail and a front edge slidably supported on the lower forward rail.

1,840,947. LIQUID DISTRIBUTING TROUGH. Frederick E. Hartmann, Omaha, Nebr., assignor to Baker Ice Machine Co., Inc., Omaha, Nebr., a Corporation of Nebraska. Filed July 8, 1927. Serial No. 204,257. 2 Claims. (Cl. 299—58.)

2. In a water cooler, a header including an elongated slotted pipe, means, for supporting the pipe horizontally with the slot thereof presented upwardly, supporting means including vertical posts and members supported by the posts below the header, a trough, brackets projecting oppositely from the trough, and sets of rods mounted respectively on the posts and on said members and having threaded connections with said brackets for adjustably supporting the trough.

1,840,953. PRESSURE ACTUATED GOVERNOR. John F. Hoffman, Omaha, Nebr., assignor to Baker Ice Machine Co.,Inc., Omaha, Nebr., a Corporation of Nebraska. Filed Feb. 23, 1928. Serial No. 256,454. 2 Claims. (Cl. 60—54.5.)

1. In apparatus of the character described including a spring-pressed stem, and means for delivering a fluid pressure medium in-



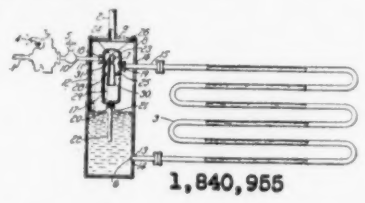
1,840,953

cluding a conduit, a pressure-actuated governor comprising a fluid-containing casing, flexible diaphragms on different sides of the casing in contact with the fluid therein, means including a plurality of pipes connected with said conduit for delivering said fluid pressure medium simultaneously to the several diaphragms to press equally on the fluid in the casing, and means receiving pressure of fluid in the casing and including a piston movable in the casing for transmitting the pressure of the casing fluid to the stem.

1,840,954. REFRIGERANT CONTROLLING APPARATUS. John F. Hoffman, Omaha, Nebr., assignor to Baker Ice Machine Co., Inc., Omaha, Nebr., a Corporation of Nebraska. Filed Jan. 4, 1929. Serial No. 330,184. 13 Claims. (Cl. 62—3.)

1. In combination with refrigerating apparatus including a fluid supply line, an evaporator, and a return line, a surge trap communicating with the evaporator and having its lower end connected into the supply line and a casing connected into the return line and extending over the upper portion of the surge trap for exchange of heat between fluids contained by the surge trap and the casing.

1,840,955. REFRIGERATION SYSTEM. John F. Hoffman, Omaha, Nebr., assignor to Baker Ice Machine Co., Inc., Omaha, Nebr., a Corporation of Nebraska. Filed Jan. 14, 1929. Serial No. 332,308. 6 Claims. (Cl. 62—126.)



1,840,955

1. In a refrigerating system of the character described including a supply line for liquid refrigerant under pressure, an evaporating chamber member, an inlet pipe, an outlet pipe, and a return line for evaporated refrigerant, a reservoir comprising a shell having communication at the top thereof with the return line, said inlet pipe being connected with the bottom portion of the shell, a casing located in the shell having an opening at its lower end, means supporting the casing adjacent the upper end of the shell including a discharge tube on the supply line and a discharge tube on said outlet pipe projecting into the shell and the casing in vertically spaced relation, partitions dividing the casing into a plurality of chambers communicating respectively with the supply line, said outlet pipe, and the shell, and tapering concentric nozzles in the partitions for passage of liquid refrigerant from the supply line through the second chamber for inducing flow of gaseous refrigerant from the evaporating chamber for passage with said liquid refrigerant through the third chamber into the reservoir for movement of liquid refrigerant by gravity into the evaporating chamber member and movement of vaporous refrigerant into the return line.

1,841,258. LIQUID FOR USE WITH REFRIGERATION SYSTEMS. Hugh J. Scullen, Detroit, Mich., assignor to Copeland Products, Inc., a Corporation of Michigan. Filed July 21, 1928. Serial No. 294,579. 4 Claims. (Cl. 252—5.)

1. A brine for use as a heat absorption medium around the evaporator element of a refrigerator system comprising an eutectic solution of water and an inorganic salt, the brine being adapted to freeze in the normal operating range of the system.

(*To Be Continued in Next Issue*)

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